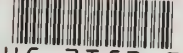


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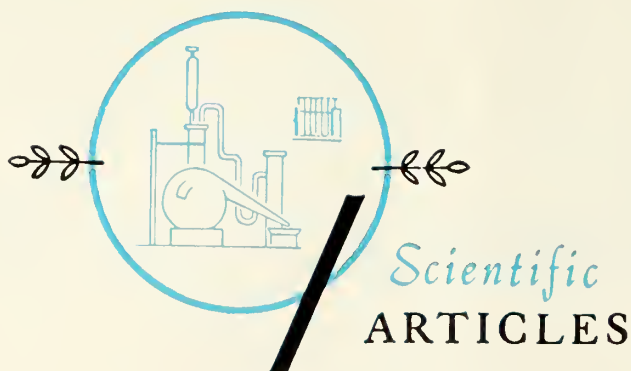
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Special Psychiatric Issue

The present issue of the JOURNAL is devoted exclusively to psychiatric-related discussions which should be of interest to most practitioners.

The material has been prepared at the request of the physician education committee of the Kansas Psychiatric Society. Opinions expressed are, as with most scientific articles, those of the authors and not policy statements of the Kansas Psychiatric Society.

Dr. H. G. Whittington, director of Community Health Services of the State Department of Social Welfare, has spearheaded this issue—stimulating authors to prepare articles, and assembling them for us. We appreciate his contribution and proudly present the result to our readers.



Training

To Become a Psychiatrist

HERBERT C. MODLIN, M.D., *Topeka*

SOME GOALS and tasks of the psychiatric educator are the same as those facing the directors of medical and surgical training programs; some are different. In the interest of conserving space and with the assumption that the similarities need no explication, this report will emphasize the differences; the problems (and sometimes dilemmas) unique to the making of a psychiatrist. Reference will be made to current and not always satisfactory solutions to these problems.

Whom to Train

The problem. The selection of psychiatric residents has been the subject of much investigation since World War II produced an influx of applicants.^{4, 7} In common with any specialty program, the psychiatric training center is interested in the applicant's intelligence and capacity to learn, academic record, motivation and integrity. In addition, crucial factors to assess are psychological mindedness, sensitivity to the needs and concerns of others, and ability to communicate effectively. To select the person with these attributes from the available pool of applicants is no small task since medical school selection procedures tend to favor the student of physical and biological sciences rather than the student of social and psychological sciences.³ Also, general medical training helps the budding doctor to acquire the needed protection of a professional objectivity which partly, at least, is somewhat antithetical to the humanistic point of view a psychiatrist must possess.²

Psychiatric residents find becoming a psychiatrist an experience in some respects analogous to becoming a doctor in the first place. Most consider it a rewarding experience since it equips them not only for the practice of an important and challenging medical specialty, but also for a broader and deeper appreciation of the human personality in health and disease, and a sharpened perspective of themselves and their fellow creatures as functional and related units of social interaction.

The solution. An applicant's medical school transcripts and letters of recommendation do not suitably reveal his aptitude for learning to handle the vicissitudes of a prolonged professional relationship with a mentally ill person. The training center in Topeka, known as the Menninger School of Psychiatry, has evolved a selection procedure which includes three separate hour-long interviews of the applicant by three separate psychiatrists, and a battery of tests administered by a clinical psychologist.⁴ These four sources of information provide a composite description of the applicant with special attention to the qualities deemed most desirable for his realizing success in a psychiatric career.

Only by observing the applicant in these interview situations can his potential capacities for psychotherapeutic interaction with patients be assayed. It is chiefly for this reason that the American Board of Psychiatry and Neurology, alone among specialty boards, conducts exclusively oral examinations of its candidates.

What to Teach

The problem. Psychiatric teachers are intimately and inescapably familiar with the phrase "goals of the training program"; often propounded with a question mark inflection. Presumably, every residency program is designed to produce the "good" surgeon or urologist or pediatrician or internist. The "good" psychiatric practitioner is difficult to define; for the psychiatrist's functions are constantly being redefined in response to influences, changes, and pressures inside and outside the medical profession. The following definition of psychiatric responsibilities was proposed seven years ago,⁷ and some parts of it already need revision: (1) Care of the psychiatric inpatient; (2) Care of the general hospital patient with psychiatric problems; (3) Care of the psychiatric patient in the community; (4) Teaching; (5) Consultative work; (6) Research; (7) Community-service activities; and (8) Service in the Armed Forces.

"Psychiatrists are still in the process of defining their roles in connection with an expanding range of objectives. Thus, new problems are posed which are reflected in the perplexities of present educational programs."⁷

Psychiatry, the youngest of the major medical specialties, is still suffering the growing pains which most of its sister medical disciplines have passed through.⁵ It is trite to say that medicine, as a whole, grows and changes constantly with new scientific knowledge, clinical treatment techniques, and social evolution. Psychiatry, while inseparably participating in this over-all growth, must, in addition, cope with its own growth problems which are specific to the intangible nature of its subject matter, the rapid fluctuations of social acceptance, and the extension of its professional applications. The conscientious teacher hopes to prepare his students not alone for the practice of today's medicine, but for tomorrow's too. We can predict with less certainty what psychiatry will be like ten years hence than what dermatology or orthopedics will be like.

The psychiatrist's dilemma resembles the internist's in that he is both a specialist and a generalist. Psychiatry is not defined by anatomy (urology, ophthalmology), function (obstetrics), treatment technique (surgery), or age of patient (pediatrics, geriatrics). The psychiatrist has to practice public health and preventive medicine, diagnose and treat illness, conduct

much of his own basic as well as clinical research, and help children, adolescents, adults, and senior citizens inclusively.

Illustrative of the educator's problem of keeping up with the changing pace of psychiatry are recent actions of the Joint Commission on Mental Illness and Health and the American Psychiatric Association. The 1961 report of the Joint Commission* presents numerous examples of important basic developments pertinent to psychiatric education,¹ one of which is a convincingly documented statement concerning our woeful shortage of professional manpower. There are not, and will not be in the foreseeable future, enough psychiatrists. The report's significant recommendation stemming from this fact is that many additional non-psychiatric personnel be urged into mental health service; these to include, among others, the family doctor, public health nurse, minister, and members of community welfare agencies. This recommendation confronts the psychiatric instructor with the unenviable obligation to train his residents as effective teachers of nonpsychiatrically and even nonmedically oriented persons. This means not just discovering and potentiating the innately gifted teacher, but also planting and cultivating motivation and ability to teach in his average resident.

The solution. It was not unusual for the prewar psychiatric resident to move annually from one institution to another to obtain the training each excelled in—hospital work, outpatient psychotherapy, child psychiatry, neurology, etc. In the period since World War II we have witnessed the advent of the training center, "The co-operation and co-ordination of a number of institutions and facilities, no one of them sufficient by itself to meet total training needs."⁶

The residency program in Topeka, a pioneer in the training center idea, is a representative example of this development. The resources of the Veterans Administration Hospital (medical, surgical, neurological, psychiatric, geriatric services), the State Hospital (children's, adolescent, adult services), the Menninger Foundation (children's, adult, neurological, research, geriatric, social psychiatry services), the V. A. Mental Hygiene Clinic, the Family Service and Guidance Center, the Student Health Services of the University of Kansas and Washburn University, the Boys' Industrial School, the Psychiatric Service of Forbes Air Force Base, and the new Reception and Classification Center of the State Prison System; all these have been welded into a psychiatric residency training center with a unified faculty and a common administrative executive committee.

Although, without exception, the parent institution

* Authorized by Congress in 1955 to survey the mental health needs of the nation.

for a resident is one of the three hospitals, the maximum clinical assignment to adult hospital psychiatry is 18 months. The other half of the three years is spent in such assignments as child psychiatry, neurology, geriatrics, research, or outpatient psychotherapy. The V. A. resident may be assigned to the Menninger Clinic for child psychiatry and to the University of Kansas Student Health Service for outpatient experience. The State Hospital resident may obtain his neurological training at the V. A. Hospital and his outpatient work at Family Service and Guidance Center.

Supplementing the varied clinical assignments is an organized didactic program presented by the integrated faculty, featuring in the first year, material on the psychiatric case history and examination, hospital treatment, history of psychiatry, and psychodynamics; in the second year, neurology, research, child psychiatry, psychotherapy, and psychopathology; in the third year, applications of psychiatry to law, industry, religion, hospital administration, community social agencies, and general medicine.

Basic Science

The problem. The surgical or medical resident enters his years of specialty training well grounded in basic anatomy, physiology, and biochemistry. The beginning psychiatric resident, identically trained in the basic biological and physical sciences necessary to his future medical career, is essentially uneducated in basic psychology, sociology, cultural anthropology, psychodynamics and psychopathology.

The solution. Unique to the psychiatric residency program is organized teaching in basic sciences. Since the psychiatric neophyte must become versed in the physiology and pathology of individual, family, group and societal behavior, a large portion of curriculum time in the first two years of his residency must be devoted to these basic sciences of psychiatry.

Professional Growth

The problem. The effective psychiatric program helps the developing resident to realize a secure identity of himself as a psychiatrist. In his progression toward this realization, the resident must "unlearn" or modify certain traditional medical attitudes, but at the same time, retain his acquired identity as a physician. In the stress of this effort, the first year resident commonly experiences a period of confusion, and even anxiety, which his mentors must help him to resolve.

The positive developmental aspects of becoming a psychiatrist are fraught with other difficulties besides the desirability of back tracking a bit and undoing some effects of medical school culture. One of these

difficulties, for example, concerns the tripartite technique we humans use to "become" something: imitation-identification-incorporation. The medical student, intern, or resident tends (consciously and unconsciously) to choose an important teacher or practitioner as a model to emulate; then by working with him on ward rounds, before the x-ray viewing box, at the operating table, and in the pathology laboratory, comes to imitate him, adopt some of his attitudes and behavior and, in a sense (by taking into himself certain qualities of his model), become a duplicate of him to some extent. Although the typical medical preceptorship is not a well-rounded system of graduate medical education, it does facilitate and assist the apprentice in the all-important process of "becoming."

Certain abstractions, subtle nuances, and conceptualizations which are essentials of the psychiatric attitude and point of view are at best difficult for the resident to grasp quickly. Such learning is not made less difficult by the fact that he can seldom watch his teacher at work; nor can his teacher watch him. The long process of diagnostic evaluation of a psychiatric patient and the longer process of individual psychotherapy can rarely be a shared experience of student and teacher because of the extent of time involved and because of the extremely private nature of the doctor-patient relationship in psychiatry. Even ward rounds are a problem. The resident must spend about two hours each day on rounds to care for his average load of 25 patients; and there are simply not sufficient hours in the day of a staff psychiatrist, supervising two or three residents, to allow his participation.

The solution. The supervisory hour has become the backbone of residency training. The resident and supervisor sit together one or more times each week and review the resident's work: his successes, failures, and problems in dealing with his patients, their families, ward personnel, and colleagues such as clinical psychologists, social workers and fellow physicians.

After at least several months of ward experience, the resident is encouraged to start individual exploratory psychotherapy with a few patients. For each such case, he receives a weekly supervisory hour in which his psychotherapeutic sessions with the patient are reviewed in detail. Here, the preceptorship method can have some application. The supervisor may say, "I would have handled the patient's remark this way—" or, "Instead of answering the patient's question, I would have asked her why she asked."

Recent attempts to extend the supervisor's influence include tape recordings, one-way vision rooms, and closed circuit television. Such methods allow the supervisor to look in on the resident at work, and also

to demonstrate his clinical skills while the resident observes.

Supervision is a skill compounded of clinical competence, educational intent, and psychotherapeutic technique. It is not lecturing to the resident, psychotherapy for the resident, or a "how to" course. Many directors of training programs consider it advisable to conduct seminars for, or individual sessions with, supervisory staff personnel to instruct them in the intricacies of the supervisory process.

Personal Development

The problem. The psychiatric educator must promote not only professional, but also personal, growth in his trainees. The psychiatrist's own personality is a prominent, sometimes the only, treatment tool in many cases. A psychiatrist must be, in a certain sense, involved with his patients, but at the same time capable of assuming the objective observer's role. He must, as he observes the patient's actions, emotions, and verbal productions, be able at the same time to observe and evaluate his own reactions and responses. A considerable capacity for realistic self-assessment, constructive self-criticism, and self-correction of personal behavior are integral assets of the good psychiatrist, and are rarely found in the needed proportion and quantity except in the relatively mature man.

The solution. There is no simple solution to a problem which, by definition, is open-ended. The psychiatric educator's hope is merely to help the student on his way toward continued personal maturation. He does so by encouraging in his resident capacity for self-scrutiny leading to increased self-knowledge. All facets of the program contribute to this end. The over-all plan is to provide much supervision and a structured didactic experience for the beginning resident; then to increase gradually the resident's opportunity for self-sufficiency until, by the third year, he elects many of his own clinical services and didac-

tic seminars, and receives comparatively minimal supervision.

The one-to-one supervisory relationship contributes significantly to development of the proper, constructive use of introspection. Although supervisor and supervisee intend primarily to treat and help a patient, both also and simultaneously work to advance the resident's education. He is an object of scrutiny along with the patient. Occasionally the supervisor is impelled to point out repeatedly a student therapist's mistakes, stemming from some psychological trait in the student. Supervision is at all times instructive, but in handling the resident's exuberance, inhibitions, blind spots, and biases, the psychiatrist-supervisor runs the occupational risk of slipping into a therapeutic relationship with his student. Supervisors, in discussing with each other their common problems, often speak of the difficulty in determining where supervision leaves off and psychotherapy begins.

It is not unusual for residents who become aware of inflexible and hindering personality traits to seek psychotherapy, occasionally at the suggestion of a supervisor. Several centers are experimenting with simultaneous psychiatric and psychoanalytic training, an essential ingredient of which is a personal analysis for each resident.

References

1. Action for Mental Health. Report of the Joint Commission on Mental Illness and Health, Basic Books, Inc., New York, 1961.
2. Becker, Howard S., et al.: Boys in White. Univ. of Chicago Press, Chicago, 1961.
3. Buehler, John A. and Trainer, Joseph B.: Prediction of Medical School Performance and Its Relationship to Achievement. J. Med. Education, 37:10-18, 1962.
4. Holt, Robert and Luborsky, Lester: Personality Patterns of Psychiatrists. Basic Books, Inc., New York, 1958.
5. Menninger, Karl: The Cinderella of Medicine. N. Y. State J. of Med., 38:922-925, 1938.
6. The Psychiatrist: His Training and Development. Amer. Psychiatric Assn., Washington, D. C., 1953.
7. Trends and Issues in Psychiatric Residency Training. Report No. 31, Group for the Advancement of Psychiatry, New York, 1954.

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Practicing

Psychiatric Practice in a Kansas Community

H. G. WHITTINGTON, M.D.,* *Lawrence*

PSYCHIATRY, as a medical specialty, was born and reared in the isolation of the state asylum and in the ivory tower of the university medical center. Private practitioners of psychiatry have congregated in large urban areas, and indeed, continue to do so. Only in recent years have they begun, in appreciable numbers, to settle in small towns. Deprived thus of some of the protection of working in a psychiatric institution, with rules set up (at least partly) to protect the staff, and freed of the non-purposive bias in patient selection imposed by having a specialized medical facility at some distance from the source of patients, the community psychiatrist may come to look at his practice somewhat differently, or with different emphases, than did his academic progenitors.

Existing Conditions

After three and one half years of practice in a Kansas county of some 44,000, including 8,000 to 10,000 university students annually, I have attempted to examine my experiences and understand more about psychiatric practice in the community. In presenting this paper, certain of the conditions of my practice should be stated explicitly:

(1) The community had been host to a succession of psychiatrists for the ten years preceding my arrival, each of whom devoted approximately ten hours per week to private practice.

(2) During this period, various clinical psychologists had seen, and continued to see, private patients on a part-time, independent basis.

(3) Varying amounts of clinical psychiatric time were available to different segments of the population in Douglas County in the period under study, but it is evident from *Table I* that a steady growth has occurred over the years. There was an over-all increase between July 1957 and December 1961 of 49 per cent. Between 1954 and 1959, an increase nationally of 29.9 per cent of clinic hours per 100,000 population occurred.¹ The rate of growth of available psychiatric hours in our community, then, would seem to have exceeded the national growth rate by considerable margin.

(4) The relative "richness" of the county in

psychiatric man power over the period of this report is pointed out in *Table II*. This tabulation does *not* include hours for the private practice of psychiatry, as comparable national and state figures are not available.

The oft-bemoaned estrangement of psychiatry from medicine is not apparent in this analysis of psychiatric practice in a Kansas community. Admittedly, this study begins after ten years of participation by preceding psychiatrists in the practice of medicine in the area, and may be a commentary on how psychiatric practice may evolve with hard work and diligent attention by the psychiatrist to his role as a physician.

(5) However, there is a disparity in the concentration of available services by socioeconomic group. If the University of Kansas is excluded, we find (*Table III*) that there are probably about two times as many psychiatric man-hours per patient available for upper-middle and upper class segments of the population as for the lower-middle and lower class economic strata.

Philosophy of Practice

Certain of my professional convictions also influenced my style of practice. These rules of thumb may be summarized as follows:

(1) The primary role of the physician is to relieve suffering.

(2) To accomplish this with optimum effectiveness, he must be available to the patient upon demand, when the individual becomes ill.

(3) Because of this, and because emotional illness when untreated tends to become more severe, a waiting list for the initial examination is inherently anti-therapeutic. It is better to put band-aids on scratches than to drain abscesses.

(4) Consequently, medical responsibility was accepted only if the patient could be seen within a week; otherwise a referral elsewhere was accomplished

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TABLE I
ESTIMATED MAXIMUM TOTAL HOURS OF CLINICIAN TIME
AVAILABLE PER WEEK ON AVERAGE*

	<i>Private Psychiatrist</i>		<i>Clinical Psychologists</i>	<i>Community† Mental Health Clinic</i>	<i>K.U.‡ Mental Health Clinic</i>	<i>Total</i>	<i>Total Excluding K.U.</i>	
	AUTHOR	OTHER						
July '57-June '58	0	15	20	36	80	151	71	
July '58-June '59	10	2	20	55	90	177	87	} Period covered by paper
July '59-June '60	10	0	35	85	120	250	130	
July '60-June '61	10	10	25	100	150	295	145	
July '61-Dec. '61	20	10	25	110	60	225	165	

* Not all of these hours would be devoted to direct person-to-person interviewing, of course. Record-keeping, case conferences, administration, mental health education, etc., would absorb a considerable portion of time, particularly in a clinic setting.

† Intake limited to county residents whose income is, generally, less than \$6,000 per year.

‡ Intake limited to University of Kansas students.

or attempted. Similarly, patients after evaluation were referred elsewhere for psychotherapy, if that were the recommended treatment, rather than being put on my waiting list.

(5) Referrals from my physician colleagues were seen without question, and promptly—and management or treatment suggestions were made, even if the patient could not be accepted by me for therapy.

(6) I expressed in my practice my conviction that

mental illness, by and large, is best treated:

- In the milieu in which it occurs;
 - As an outpatient; and
 - With use of medication, psychotherapy, environmental therapy, or other standard treatment devices.
- Any theoretical orientation that offers only one approach to treatment is limited in *general* effectiveness. While psychotherapy of sorts is a part of every treatment process, it is by no means the only or the

TABLE II
COMPARISONS OF AVAILABLE
PSYCHIATRIC SERVICES IN CLINIC SETTINGS

	<i>April 1959 Clinic Hours/ 100,000 Population/ Week</i>	<i>April 1961 Clinic Hours/ 100,000 Population/ Week</i>	
Douglas County (including K.U.)	348	575	
U.S.	149	c.169	
Douglas County (excluding K.U.)	181.5	230	
Kansas	247	c.270	
"Target" for ¹ U.S.			1970 280
K.U.	1,125	1,500	
Colleges:			
National Average	85	?	

Note: Private psychiatric practice is not included.

TABLE III
DISTRIBUTION OF CLINICAL SERVICE
BY SOCIO-ECONOMIC CLASS AS OF APRIL 1961

	<i>Income <\$6,000</i>	<i>Income >\$6,000</i>	<i>Ratio</i>
Douglas County ³ Residents	26,250	8,750	3:1
Hours Available* per Week	110	55	2:1
Prevalence Rate/ 100,000 ²	740†	540**	1.4:1
Adjusted Patient Population	200	47	4:1
Available Hrs.: week per Patient	0.55	1.2	1:2.2

* Douglas County Mental Health Center for those with less than \$6,000 per year income; private practitioners for those with more than \$6,000 per year income.

** Social Class I-III, estimated combined prevalence.²

† Social Class IV & V, estimated combined prevalence.²

"ultimate" modality, beside which other techniques are inferior.*

d. Supportive hospitalization in a community hospital may often be a useful adjunct to the outpatient treatment process.

Analysis of Practice

The analysis of case load summarized in *Figures 1-5* reveals that several attitudes prevalent among psy-

The heterogeneity of private practice in psychiatry is also apparent. Patients vary widely as to type and severity of illness. Likewise, types of treatment advised are varied. Only 33 per cent of the cases were advised to receive psychotherapy as primary or exclusive treatment (although many of those referred elsewhere for evaluations may have eventually gotten such advice*), and most patients were seen for only a few visits (*Figure 5*).

Only 62 per cent of the patients are known to have followed the recommendations for treatment, while 38 per cent either rejected the treatment advised or else the outcome is unknown. Again, this percentage did not differ significantly between the M.D.-referred and other-referred. Over the years, only an average of 22 per cent of the patients I saw entered into psychotherapy with me.

Certain physicians seem to use a psychiatrist more readily than others. As a consequence, 28 per cent of the local physicians referred 63 per cent of the M.D.-referred patients. Also, some practitioners referred the bulk of the individuals as outpatients; while others characteristically called on the psychiatrist to see patients who were hospitalized. Only 13 per cent of the total referrals were felt by the author to be unnecessary or in any way inappropriate. However, in a situation where psychiatric man power is at a premium, many of those who were seen for only one or two hours could have been interviewed and adequately managed at the intake level by a psychiatric social worker or clinical psychologist.

No comprehensive information is available as to the outcome of the psychiatric treatment of these patients. Some anecdotal follow-up material is available. One patient committed suicide one and one-half years after being evaluated by the author as suicidal; when the husband refused to hospitalize her, I asked to be, and was, relieved of medical responsibility. One young man made a serious suicidal attempt a year after I had evaluated him as potentially suicidal; the parents instead had urged him to join the service, where he jumped from a third-story window. Another man of 30 whom I believed to be experiencing an organic brain syndrome with psychotic reaction, rejected the recommendation for hospitalization for a psychiatric and neurological evaluation. His mother was unable to follow my advice for commitment, and six weeks later he died with a massive rupture of his leaking cerebral aneurysm. Following premature termination of brief psychotherapy, a depressed man was serious-

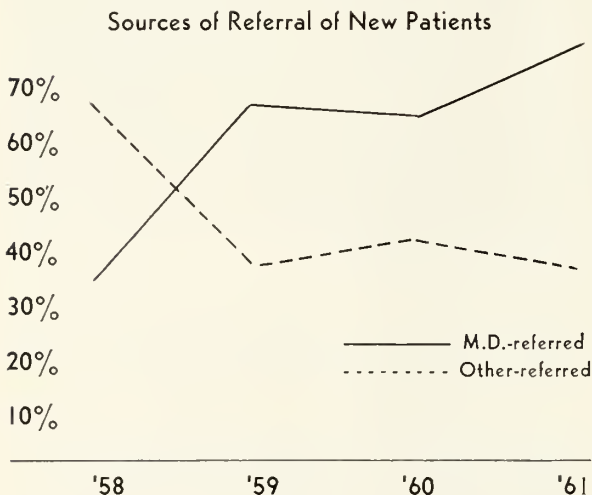


Figure 1

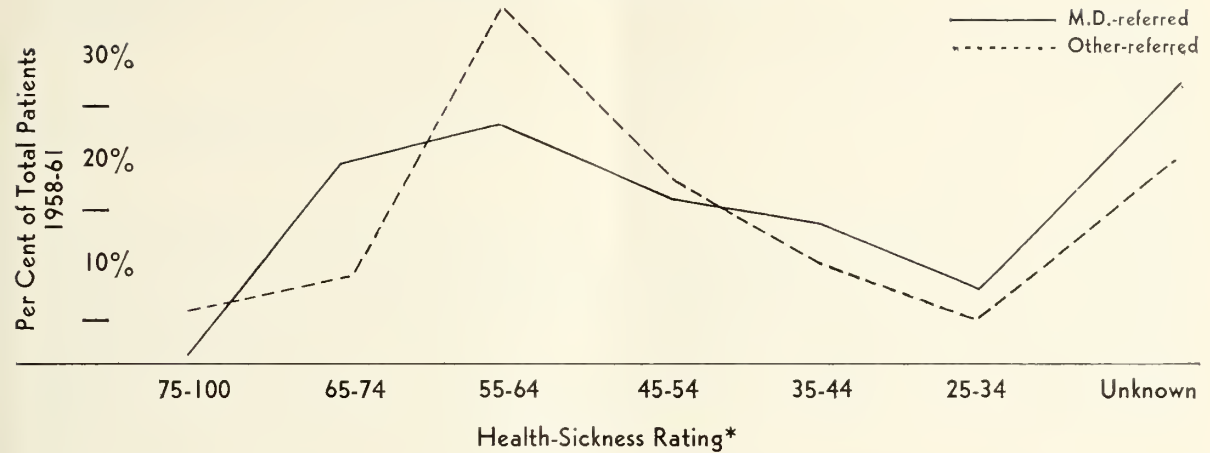
chiatrists do not seem to be valid. Like neurotic patients, psychiatrists often emphasize their estrangement from the larger social group, in this case from the medical profession. Projection and rationalization may be used to bolster this idea that psychiatrists have to "go it alone," are "not appreciated" by their medical colleagues, and so forth. Not only have the majority of my patients been referred by private physicians, but as a group the physician-referred patients do not differ greatly from the other-referred, along such dimensions as severity of illness (*Figure 2*), diagnosis (*Figure 3*), treatment advised (*Figure 4*), and hours seen (*Figure 5*).

More of the M.D.-referred patients were older citizens (16.2 per cent over 55, vs. 5.8 per cent for non-M.D.-referred), which is also reflected in the larger number of organic brain syndromes. Sex-distribution also differed, in that only 27 per cent of physician-referred patients were male, while 43 per cent of the other-referred were men.

* However, electroconvulsive treatment was not available in our community. Patients requiring such treatment, a well-structured milieu program, separation from noxious interpersonal relationships, or requiring strong external controls for aggressive impulses, were referred to state or private psychiatric hospitals.

* The usual circumstance for referral elsewhere for a fuller evaluation involved financial limitations. The community mental health clinic, or a state hospital outpatient clinic were the resources most utilized in such cases.

Severity of Illness: M.D.-Referred Compared to Other-Referred



* Definition of Scale Points:

- 75—Very mild neuroses or addictions and behavior problems.
- 65—Clearly neurotic conditions.
- 50—Severe neuroses; some compensated psychoses; many character disorders, neurotic depressions.
- 35—Most borderline schizophrenics; severe character problems, psychotic depressions may be this high.
- 25—Overt psychoses, psychotic characters, severe addictions.
- 10—"Closed ward" patients.

Figure 2

ly injured in an automobile "accident" over a year later. As yet, however, no systematic follow-up has been accomplished on the remainder of the cases.

Conclusions

In the experience of the author, the reality of psychiatric practice is at some variance with psychiatric residency training. In training, the emphasis often is on the searching and prolonged evaluation, with the assistance of the social worker and clinical

psychologist; and on the practice of long-term psychotherapy. In practice, brief evaluation and treatment with modalities other than psychotherapy are the rule.

The effectiveness of any medical treatment can be judged only in the light of its usefulness in achieving the remission of illness or symptoms of disease. To this end, follow-up studies must be completed in the near future. Since "the proof of the

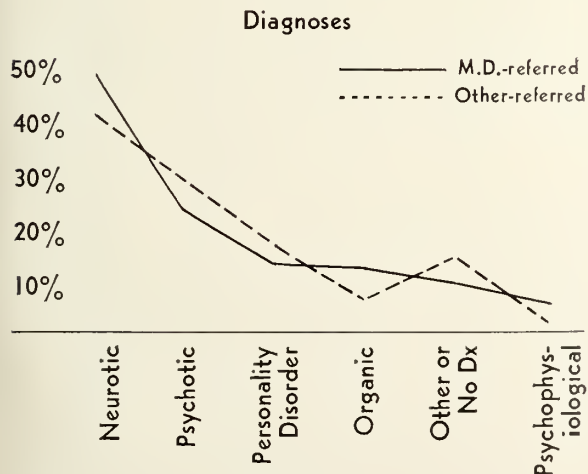


Figure 3

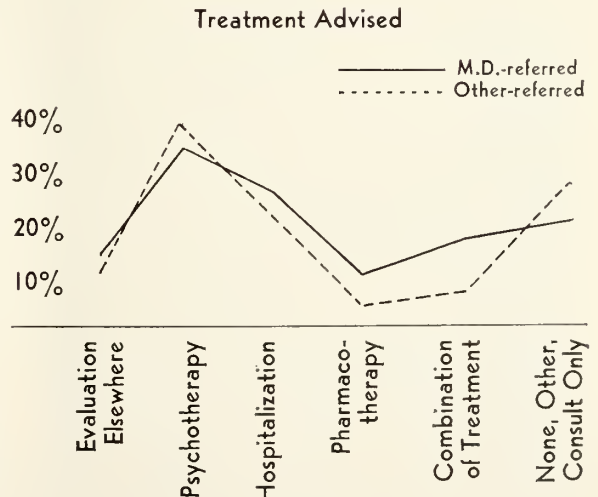


Figure 4

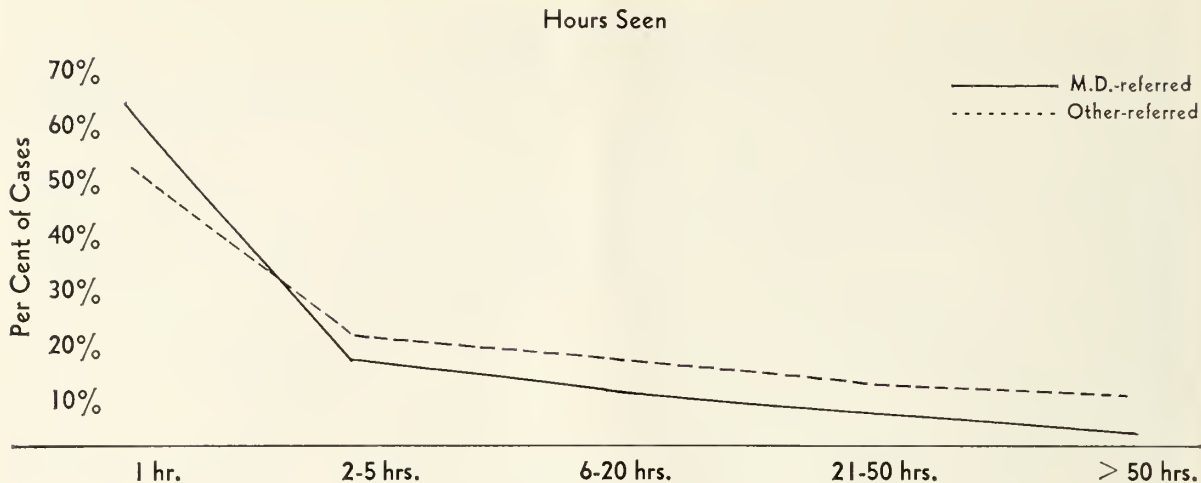


Figure 5

pudding lies in the eating," any style of psychiatric practice can be finally appraised only in terms of its effectiveness in ameliorating problems in living with oneself and one's fellow-man. This descriptive study stands only as prologue, then, to an evaluative follow-up of ex-patients.

References

1. McCarty, C., et al.: Trends in outpatient psychiatric clinic resources, 1959. *Ment. Hyg.* 45:483-493, 1961.
2. Hollingshead, A. B., and Redlich, F. C.: *Social Class and Mental Illness*. New York: Wiley & Sons, 1958.
3. *Sales Management, The Magazine of Marketing*. New York, New York, 1961.

KANSAS STATE BOARD OF HEALTH TOPEKA, KANSAS

Division of Preventable Diseases—Division of Vital Statistics—Kansas Morbidity Incidence
Summary of Cases Reported in September 1962 and 1961
And Cumulative Totals for the First Nine Months of 1962 and 1961

Disease	September			January to September Inclusive		
	1962	1961	5-Year Median 1957-1961	1962	1961	5-Year Median 1957-1961
Amebiasis	1	3	3	38	34	34
Aseptic meningitis	20	6	*	30	8	*
Brucellosis	—	9	8	13	39	46
Cancer	438	367	422	3,049	3,047	3,812
Diphtheria	—	—	—	—	—	2
Encephalitis, infectious	4	9	10	19	20	32
Gonorrhea	195	267	237	1,717	2,111	1,603
Hepatitis, infectious	27	42	9	379	616	218
Meningococcal, meningitis	2	—	—	12	12	12
Pertussis	3	1	9	37	19	52
Polio myelitis	—	—	9	—	7	29
Rheumatic fever	—	—	—	8	4	3
Salmonellosis	5	5	*	40	42	*
Scarlet fever	9	8	8	415	855	461
Shigellosis	8	13	1	49	102	17
Streptococcal, infections	67	102	14	981	1,023	349
Syphilis	68	122	122	884	949	1,048
Tinea capitis	12	17	17	100	92	163
Tuberculosis	36	20	37	210	225	287
Tularemia	1	1	—	8	10	21
Typhoid fever	—	—	—	—	2	4

* Statistics on 5-Year Median not available.

Changing Concepts

The Somatic Treatments in Psychiatry: Current Status

PAUL E. FELDMAN, M.D., *Topeka*

EVEN A SUPERFICIAL appraisal of the current status of somatic treatments in psychiatry highlights the fact that during the past ten years the developments have been such that most standard somatic modalities of as recent as ten or fifteen years ago are now outmoded and no longer in use.

The old standby—hydrotherapy—whether it be in the form of packs, tubs, Scotch douche, stimulating douche, salt-rub, etc., simply has fallen into disuse. Likewise, insulin coma therapy which was a major modality for the treatment of schizophrenia has now been abandoned by most mental hospitals. Electroshock therapy, though still in use, has been curtailed to some extent and gives every indication of suffering the same fate as insulin coma. Lobotomy (and topec-tomy) is inconceivable today as an efficacious procedure.

Some chemotherapeutic agents have been in use for many years and are still effective when properly prescribed. These are a variety of compounds which are referred to as sedatives and hypnotics; the most popular of these being the barbiturates, the bromides, chloral hydrate and paraldehyde.

The various barbiturates, in sub-hypnotic doses, can be very effective in controlling mild degrees of anxiety, hyperactivity, tension, insomnia, etc. It must be kept in mind that patients under the influence of these compounds have a lowered threshold of consciousness, increased reflex time and diminution of intellection and learning. As a consequence, they are less alert, less competent, cannot respond as well or as promptly to an emergency and may manifest behavior and ideation indicative of defective judgement. These compounds are still useful in the treatment of minor mental disorders and as an adjunct to the treatment of more serious disorders.

They are indicated in the management of acute mental states where rapid drug effect is desirable and where it is anticipated that the course of therapy will be relatively brief. States of excitement, sorrow, tension, anxiety, hyperactivity, etc., where rapid control is indicated are typical states where a sedative (or hypnotic) may be employed to advantage. Emotional reactions due to precipitating factors in the environment and where the disturbance may be presumed to be self-limiting insofar as time is concerned can be managed successfully with these drugs.

We are currently in an era where the somatic treatments methods are primarily those of using the various psychotherapeutic compounds which have been developed since the early 1950s. In reality though, the current era of psychopharmacology dates back to about the time of World War II, where as a result of experiences with narcoanalysis, many investigators

Somatic modalities used in the treatment of psychiatric disorders fifteen years ago are almost abandoned—hydrotherapy, insulin, coma therapy, electroshock, etc. The successor for these treatments has been chemotherapy—tranquilizers and energizers. Their use should be limited to those patients having the proper indications, for this type of treatment is no panacea for all mental ills—may indeed even be a hazard to the patient.

became interested in compounds which influence behavior.

One of the earliest of these compounds was mylan (Tolserol® E. R. Squibb & Sons). For a short period, rather extraordinary results were obtained with this drug in a variety of psychiatric states. Its current use is negligible though it does have some desirable action as a muscle relaxant; but this action is too minor and fleeting. Chemists and pharmacologists continued to search for an analog of this compound which might have this property in greater abundance. Efforts in this direction led to the development of meproamate (Equanil® Wyeth Laboratories and Miltown® Wallace Laboratories). In its heyday, it was probably the most widely prescribed tranquilizer and this status has only been threatened in the past year or so by the development of chlor-diazepoxide (Librium® Roche Laboratories).

The major event in the current era though was the simultaneous (but unrelated) appearance of chlorpromazine (Thorazine® Smith Kline & French) and reserpine (Rauwolfia alkaloid) as agents for the treatment of mental illness. The instantaneous success and

popularity of Thorazine® prompted the development and marketing of a fantastic number of its analogs. For practical purposes, the uniqueness and specificity ascribed to any given analog by its manufacturer would be most difficult to demonstrate clinically.

With the passage of time, other drugs, not related structurally to Thorazine® or reserpine, but having similar psychic effects, have been developed so that at present we have four types of compounds which we consider as belonging to the tranquilizer group of drugs:

(1) Thorazine®-like compounds (phenothiazine derivatives).

(2) Reserpine compounds (Rauwolfia alkaloids).

(3) Diphenylmethane derivatives (such as Atarax® Roerig & Company; Suavitil, Merck Sharp & Dohme, and Rhobex).

(4) Glycerol derivatives (such as Equanil® and Ultrán®, Eli Lilly & Company).

The tranquilizers then are a conglomerate group of drugs whose primary action is that of ameliorating hypermotile states, affective tension, etc., with a consequent promotion of tranquility. They do produce varying disturbances of the level of consciousness but unlike the older sedatives, they act at subcortical levels; and, despite the fact that they do appear to produce drowsiness, the neurophysiological basis for this is fundamentally different from that of the cortical depressants.

Investigational and clinical data does not justify the assumption that any of these drugs have specificity insofar as the treatment of any clinical entity is concerned. Their effectiveness is based upon their ability to alter certain "target symptoms"—not the underlying basic psychopathology.

The popularity of these compounds continues to grow. This despite the fact that they in themselves are not curative and at times attended by serious dangers as a consequence of their action. Their safe prescription presupposes that the prospective recipient has adequate excretory capacity, both renal and hepatic, and the continued prescription of most of these compounds in the face of pathology in these areas places the patient in serious jeopardy.

Part and parcel of tranquilizer therapy is a fantastic array of side effects. No better testimony to the efficacy of these compounds can be found than the fact that despite a host of side effects—some of catastrophic proportions—this type of therapy is being promoted on a major scale. Some of these side effects are:

(1) depression—sometimes of suicidal proportions.

(2) potentiation of the action of other drugs.

(3) masking of important alerting symptoms (such as anxiety, emesis and anginal pain).

(4) various gastrointestinal effects (such as gastric

irritation, ulceration, hemorrhage, constipation, fecal impaction, nausea and vomiting).

(5) hepatic dysfunction (such as intra-hepatic obstructive jaundice and acute yellow atrophy).

(6) cardiovascular effects (such as orthostatic hypotension, syncope and reversal of adrenalin effect).

(7) various blood dyscrasias (particularly agranulocytosis).

(8) visual disturbances (especially paralysis of accommodation and diminution of tear production).

(9) extra-pyramidal effects (such as Parkinsonism, akathisia).

(10) failure of respiratory defenses.

The successful use of the tranquilizers necessitates a conceptual dissociation of diagnostic entities from psychomotor behavior. Awareness or ignorance of this fundamental principle accounts for a large share of the discrepant observations and opinions as to the value of neuroleptic drugs. Successful chemotherapy demands that patients treated with tranquilizers present those symptoms which are known to respond to this type of medication. Other types of patients will either not respond or respond adversely.

In addition to the judicious choice of patients for tranquilizer therapy, successful results are dependent upon artistry of individualization of dosage, and, recognition of the importance of non-drug parameters in the total treatment of the patient. Sherman succinctly has stated "many chemotherapists commit the error of over-simplification by assuming that behavior can be isolated from its social context and that the patient is merely a passive recipient of a purely pharmacological agent."

More recently, a new class of compounds has been added to the armamentarium—the psychic energizers. This is again a conglomerate group which may be roughly divided into those which do and do not inhibit monoamine oxidase. Pharmacologically, these compounds are not antagonists of the tranquilizers though they appear to be indicated in types of patients whose symptomatology is somewhat the "opposite" of the hyper-syndrome patient.

Just as it may be the tranquilizers which accounts for the abandonment of insulin coma therapy, it may be the energizers which are leading electro-shock therapy to a similar fate.

Prior to the current era, cerebral stimulants such as the amphetamines, nicotinic acid, metrazol, etc., enjoyed mild popularity, but the first modern energizer was iproniazid; a compound that had been used for quite a while in the treatment of tuberculosis. It was in the treatment of tubercular patients that reports first began to filter through about the unanticipated occurrence of renewed energy, lifting of spirits, etc., following the administration of iproniazid.

From this mother substance—a Hydrazine—a respectable number of hydrazine analogs have been

(Continued on page 15)

Hospital—Community Efforts

Community Mental Health and Mental Hospital Collaboration

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I WILL DISCUSS this subject primarily on the basis of our experience in Kansas indicating something of our past and our present situation and our hopes for the future. Although the majority of my comments will deal with the two main streams of mental health activity in Kansas (the mental health centers and the integrated cooperating mental health-social welfare department programs) implicit or explicit throughout will be the viewpoint that these main streams each represent only different links in the total chain of community resources which should be available to meet the mental health needs of our citizens.

Historical

Prior to the late 1940's, there was little interest in the state's mental health needs and even fewer resources. The pioneer mental health center in Kansas was established in Wichita in 1929 and is now serving not only this city (the largest in Kansas) but also the surrounding county.

In 1949, the State Department of Public Health was appointed as the Mental Health Authority in Kansas and continued in this capacity until 1961. In 1949, the second mental health center came into being. The State Department of Public Health, acting through its Division of Mental Hygiene, with a small budget and a limited number of personnel carried out a program aimed primarily at public education, increasing public interest and support, and consultation with civic groups interested in planning for a mental health center, and with mental health centers already in existence. Some financial assistance was also possible in the development of new centers through the distribution of Federal funds.

Gradually other mental health centers developed until there were ten in operation in 1961. These mental health centers show a wide variety of administrative structures and staffing patterns as well as a variety of clinical programs with a trend toward providing a broader range of clinical services in a number of the centers.

In 1961, responsibility for the state mental health

program was transferred to the Division of Institutional Management under the State Department of Social Welfare, and legislation was enacted allowing counties singly or in groups to enact and levy up to one-half mill tax to finance the centers. The authority granted to the Board of Social Welfare is limited to approval of the establishment of new centers, or approval of existing centers wanting to operate under

The ground swell of interest in mental health and the demand for community services in Kansas, which has been rising remarkably in the last several years, continues and is manifest in the avid interest and efforts of many civic groups and professionals in counties throughout the state to obtain such services for their communities.

this new law and tax levy, contingent on their meeting certain standards. Thus, we have a system which provides mainly for a permissive guiding or consultative authority at the state level and allows for a high degree of local autonomy, planning, financing, and control.

We have seen an increasing tide of interest in and demand for mental health centers throughout the state in the last several years which has not reached its peak. At present there are 15 centers operating and in the process of organization.

There is in the Kansas history of lay activities in mental health a distinct correlation between the growing strength of the Kansas Association for Mental Health and its affiliates—the constantly growing number of county associations—and the development of community mental health centers.

State Psychiatric Hospitals

With regard to Kansas psychiatric hospitals, again we find that interest was re-awakened in trying to improve the lot of the mentally ill in the late 1940's. Large sums of money were appropriated to initiate this task and as a result more professional personnel were hired, training programs were instituted for professional and nonprofessional persons, and a build-

* Talk given at Annual Meeting of State Mental Health Personnel and U. S. Department of Health, Education and Welfare, Regional Office VI Mental Health Personnel, September 26-28, 1961, Bismarck, North Dakota, by Richard L. Meadows, M.D. At that time Dr. Meadows was Assistant Director of Institutions, Kansas State Department of Social Welfare.

ing program was started for replacement of antiquated facilities.

Several of the unique features of the Kansas welfare program which have evolved should be particularly mentioned. The Division of Social Welfare and the Division of Institutional Management both function under the State Board of Social Welfare. Cooperative efforts between the two divisions take place at all levels.

The Division of Social Welfare is responsible for supervising a county administered integrated program of social welfare including: (1) public assistance programs; (2) child welfare services; (3) services for the blind and the aging; (4) commodity distribution.

The county welfare departments are gradually developing into general family service agencies carrying out the program of prevention and rehabilitation with their effectiveness varying primarily in proportion to staff available. Services are provided within a specific geographic area and include services to: (1) juvenile courts; (2) adoption studies; (3) family case work; (4) social studies at the request of the state department or mental institutions; and (5) follow-up of persons released from the mental hospitals and supervision of individuals on parole or pass from a state institution.

The Division of Institutional Management is responsible for the administration of 11 state institutions (three hospitals for the retarded, three mental hospitals, two industrial schools for delinquents, two tuberculosis hospitals, and a diagnostic and residential home for dependent and neglected children). The mental hospitals are organized according to the section plan, which is something like having several small hospitals within the large hospital. Desegregation of patients (certain age groupings and by sex) is gradually coming about. Reorganization of these larger institutions is rapidly nearing completion, so that each section of a hospital will have a patient population from a certain set of counties in the hospital's district. This will facilitate communication between the hospital staff and responsible persons from the counties served by a particular section of the hospital.

During the last decade, we have seen the development of many nursing homes across the state, mainly private homes, and the mental institutions have provided training opportunities and consultation services for the staff of these homes. County welfare departments have been very active in placing many elderly or chronic ill patients in these nursing homes and in providing follow-up services coordinated closely with hospital staff and family physicians.

Interwoven in the entire development of centers and hospitals has been the professional mental health community in Kansas—particularly the Menninger

Foundation, which wielded great influence in helping other interested Kansans to obtain the appropriation of money necessary for improvement of the state hospitals. Also, working with other groups such as private practitioners of psychiatry and the staff at the University of Kansas School of Medicine, the Menninger Foundation has played an important role in the development of our training and research programs. The training programs have been invaluable as a means of providing staff for Topeka and other state mental institutions, and the community mental health centers as well.

A shortage of mental health specialists still exists. This is regrettable, but is a natural result of the increasing demand for such specialists at all levels, including (or in) private practice and facilities provided by state and local governments.

The Community Mental Health Centers

The Division of Institutional Management presently is providing consultative services to mental health centers now in existence, and to governing boards and others interested in developing mental health centers. We have developed a new set of standards for guidance of those who desire to establish a center. The standards should also be useful to centers already in existence. We are finding that in a number of instances a one-half mill levy is not sufficient for one county to finance a center and it is necessary in these cases for two or more counties to combine their resources to develop a regional mental health center.

Training

We believe it would be desirable to have a more balanced program for our personnel now being trained to a large extent in the hospitals, in order that they may be better informed with regard to community and outpatient practice. We think a broader experience is needed. We would like to see people in the mental health centers and mental hospitals participate to a greater extent in the training programs, which up until now have been mostly at Topeka State Hospital. Some of the advantages of such improvements in our program would be: (1) our clinical programs would become more attractive in recruiting and keeping both trainer and trainee because of the increased teaching opportunities; (2) such changes would result in graduates being better informed about total resources, regardless of whether these graduates elected to work in mental hospitals or mental health centers; and (3) our programs would be more attractive to those individuals who like to work in both hospitals and centers if we could arrange employment opportunities whereby some staff could provide service as well as training in both areas.

Increased training as well as a more balanced program is needed, particularly to help provide trained personnel to staff the mental health centers.

There are other areas of training where more inter-agency collaboration would be desirable, such as education opportunities for judges and various other social agencies with regard to problems of delinquency and mental retardation. Another area worthy of mention is the possibility of providing increased training and consultative assistance to family doctors who wish to carry more responsibility for their patients with emotional disturbances. It is our hope to see the development of a broader, integrated program of training in the near future.

Treatment

We think a wide spectrum of clinical resources is necessary to meet the mental health needs of each community. On this spectrum we would place mental health centers and outpatient departments at one end and mental hospitals at the other. Day-care facilities would be in the middle.

We think the community should regularly maintain some degree of responsibility for their patient who is treated by their mental health resource and that the patient's roots in the community should be preserved as much as possible. It follows in our thinking that the various clinical resources constitute lines of defense against disruption of the individual's relations with the community. We hope to see in our programs a sharpening of criteria for referral to different agencies on the spectrum and increased inter-agency support for a given individual. Thus, the suggestion has been made that the amount of time necessary for an individual to spend in contact with an agency in order to increase certain types of impulse control might be a criterion. In this case, the person might be admitted to a hospital if he were destructive to himself or others, or in conflict with society to such an extent that 24-hour care was essential. In all other instances, he might go to a day-care unit, or simultaneously be under treatment in a mental health center for psychotherapy and a day-care unit for certain other treatments. We also are hopeful that between the major units in our Kansas program (county welfare departments, mental health centers, and mental hospitals) we will see an improvement in communication and in the timing of referrals, which sometimes are made too quickly or too late.

Set against some of these hopes are some problems which must be worked through. Among these are biases about the other agencies, or about patients served by another agency. The mental hospital may tend to probe too deeply and too long at times; they may refer patients to a center too late, and may not

have sufficiently shaken off the shackles of a benevolent authoritarian approach. Some hospital staffs may feel that centers are not sufficiently meeting their clinical responsibilities. On the other hand, in some instances, mental health center personnel sometimes feel they will become only an adjunct to a mental hospital, or may refer patients too quickly to the mental hospitals. It would seem to me that these biases probably have their basis, in part, in the fact that mental hospitals see patients whose personalities are more shattered and their assets more limited, whereas the opposite tends to be true for the centers. With the evolution of the centers and the continuing integration of the mental hospitals into the community, we may see a lesser need for any but open hospitals, with very few closed rooms which might be primarily available in case an occasional patient wanted to withdraw temporarily.

Changing Concepts

(Continued from page 12)

synthesized by various pharmaceutical companies. All of them appear to have definite anti-depressant action, but unfortunately, some of them are quite toxic.

More recently, non-hydrazine anti-depressant drugs (i.e., imipramine, amitriptyline, etc.) have been developed. They are not as toxic as the hydrazines but share with them the shortcoming of rather slow onset of action. Newer and more effective anti-depressant drugs are appearing with gratifying frequency.

A new class of compounds is currently being added to our treatment modalities—the psychotomimetic drugs. It is premature to make any evaluation of their efficacy. Research reports are beginning to emanate which suggest that they may be of value in the treatment of certain psychiatric states.

Our ignorance of how the psychotropic compounds work is very great. About the only thing that appears incontestable is that these drugs “do something”—they are not innocuous, inactive compounds. Critics of psychopharmacotherapy have claimed that changes attributed to the psychotropic drugs are due to factors other than the drug and that the drugs in reality are without substantial value. The overwhelming number of reports from throughout the country belies such claims.

These are potent compounds, which, if used improperly can endanger the health (and life) of the patient. There is no such thing as a safe psychotropic drug. They all carry the element of calculated risk in their prescription. If you are aware of their potentials for doing harm—as well as good—you are then in a position to use them intelligently and with maximum benefit to your patients.

Psychiatric Case Report*

Introduction to the Problem

In April of 1962 a family physician in Kansas called a psychiatrist in private practice in his community, and presented the following problem for consultation. A young woman patient, mother of three children, had become increasingly suspicious, irritable, and prone to temper outbursts following the birth of her third child nine months previously. She and her husband were both deaf and dumb, and had been so since childhood. It was the impression of the family physician that the woman's illness was schizophrenic in nature, and that hospitalization might be indicated because of the family's concern, which was shared by him, that she might injure the children.

Examination Data

The patient was seen two weeks later, at which time she appeared haggard and chronically ill. Her manner was suspicious and resentful, and the psychiatrist had considerable difficulty in establishing a working relationship with her. Although she could read lips to some extent, and could even talk a little, she preferred to communicate with the psychiatrist by exchanging written messages. At first she denied that she had any difficulty, and seemed to have no insight into her illness. However, after awhile she wrote, "Yes, and I am unhappy ever since before Joyce was born because the neighbors always come over my house ask me if I get sick." She went on further, when this communication was acknowledged, to state that she had not really wanted the third baby, and that she felt her emotional problems were due to the strain of taking care of the infant. With her first two children she had gotten considerable help from her mother-in-law, and that this was the first baby that she had taken care of alone.

However, despite this initial success in attaining some valid communication, she became suspicious again at the end of the interview, rejected the idea that medication might be of any help to her, and refused to make another appointment. The psychiatrist told her that he would be available to her in the future, and encouraged her to come back again.

Collaboration With the Private Physician

Following this initial interview, the following letter was sent to the referring physician:

* While this report is based on an actual case, the participants, events, and descriptions have been altered to disguise and protect the identity of the individuals involved.

"I saw your patient, Mrs. X, in consultation on May 4, 1962. She was, as we might suspect, very suspicious of me and guarded in her communications. She tended to deny her difficulties, and utilized projection as a defense. However, she responded some to the evident concern that you and I have both displayed, and told me about what a heavy burden this third and unwanted child is.

"While paranoid ideation is evident, I believe this is essentially a post-partum depression in a paranoid personality. She refused medication from me and left uncertain as to whether to see me again. If she consults you, I would advise 'Taractan,' 25 mgs. q.i.d., with the target symptoms being her insomnia, anxiety, and irritability. If she does not get complete relief in two to three weeks, I would add 'Nardil' and continue combined treatment for 60 to 90 days, with appropriate adjustment of dosage.

"I believe an attitude of firm kindness, with frequent brief contacts, is indicated in your management of her. I would be sparing with sympathy, but patient and willing to listen. I would avoid injections, complicated procedures for diagnosis, and so forth, and would keep emphasizing that her illness is emotional."

Course of Treatment

The next three months were stormy ones for the patient and her family. She was very inconsistent about keeping appointments with the psychiatrist, and frequently went back to her private practitioner in an attempt to get his permission to break off psychiatric treatment. However, her family doctor continued to see her on a supportive basis, and helped her by his reassurance and interpretation to continue in psychiatric treatment. Attempts to prescribe the medication recommended to her physician met with only limited success, since she would take the medicine a week or so, gain some symptomatic improvement and then discontinue medication.

During these months she became increasingly irritable and aggressive towards the children, began to slap them and pull their hair, and her husband and neighbors became more frightened for the welfare of her children. The difficulty between her and her husband also became progressively worse, and as he became more anxious and angry, he became punitive and harsh with her. In general, the patient's illness and the family situation deteriorated together.

In August, the parents, siblings, in-laws, and husband of the patient became extremely anxious. They recognized, apparently for the first time, the severity

of her illness, and began to see that some help from them was called for. Interviews were held with a sister-in-law who lived in the neighborhood; with the husband; with the parents who lived in a nearby town; and with the brother who lived in a nearby town. Out of these interviews there emerged a picture of a girl who had always been extremely self-willed, unwilling to take directions from others, provocative, easily moved to anger, and in general very determined to have her own way. Because of the unresolved feelings of the parents concerning the girl's deafness and mutism, they contributed to this character formation by "giving in" to all her demands, no matter how unreasonable they might be. They confirmed her report that with the first two children she had a great deal of external support and help from her family; but that with this third child, which apparently no one had counted on, she had been left pretty much on her own. As this history and the attitudes of the significant people in her life were clarified, we were able to work out a treatment plan that involved the provision of considerable external support to the patient at that point in her illness. The parents agreed to accept responsibility for them in their home for several weeks, and to take her children along as well. The mother was able to get her to take her medication faithfully, and upon her return home the husband was able to get her to continue medication. The attitude of all the people in her life in general became more sympathetic and supportive, and also less anxious. As they talked about her behavior they began to see it as a pathological worsening of a chronic life adjustment, and while recognizing its severity at the same time were reassured that she would not harm her children. As all the various bits and pieces of evidence were put together, it became clear that she had talked a great deal about hurting other people, but had never harmed anyone at all, and that instead was directing her anger against herself in her depressive illness.

Subsequent Course of Treatment

Within a six weeks' time a very noticeable improvement occurred. She took her medication regularly consisting of "Marplan" 10 mgs. t.i.d., and "Librium," 10 mgs. t.i.d. By the end of September she was alert and cheerful, no longer irritable, sleeping well, and had a good appetite and some ability to enjoy life. Her two older children were back in school, which relieved her of considerable pressure. Her husband seemed much more supportive of her and less angry at her, and in general the marital relationship seemed to be improving.

The next phase of the treatment consisted of discontinuing the medication and reducing frequency of appointments, to arrive at some idea of the least fre-

quent contact that would still provide the patient with consistent support. Within a month of discontinuation of the medication she had experienced a symptomatic relapse and it was necessary to reinstitute medication and to increase the frequency of supportive contacts with the psychiatrist to once every week. However, she was taking good care of her children, was making an adequate adjustment in the community and was getting along well with her husband. She was again feeling quite suspicious of friends and neighbors and had some delusional fears, which she had experienced earlier in her illness, of men breaking into the house and raping her. She also was insisting that she wanted to have another child, and professed great anger at her husband for not agreeing to this. The patient and her husband both had been advised that it would be most unwise for Mrs. X to get pregnant again, and the family physician had collaborated in providing contraceptive information, which this couple had not had up to that time.

Discussion

This case of a physically handicapped woman with a chronic paranoid personality disorder, who experienced a psychotic illness following her third pregnancy, demonstrates one mode of collaboration between general physician and psychiatrist. The aim of treatment up to this point has not been cure, but rather the provision of external supports, psychotherapeutic help, and pharmacotherapy aimed at symptoms, all of which will hopefully result in helping the patient maintain a social adjustment of marginal adequacy. The treatment process has been complicated by the difficulty in communication; however, this difficulty has only been relative, and valid emphatic exchange between psychiatrist and patient has been possible. There is every reason to believe that continuing support will be necessary for this patient for the foreseeable future. The general plan is that the psychiatrist will see her with decreasing frequency over the months, and that the family practitioner will resume an increasing share of the responsibility for her care. Incidentally, it is important to note that in part her relapse was probably caused by her insisting upon changing to a different family physician, without consulting the psychiatrist. This new physician reacted to her rather vague complaints by prescribing a series of injections, which alarmed the patient considerably and contributed to her feeling that no one understood her.

When this was discovered by the psychiatrist, she was urged to continue with her previous physician, and upon resuming this relationship much of her anxiety was alleviated. It is important to note that

(Continued on page 22)

Book Reviews, Current Literature, Films and Pamphlets of Interest to Physicians

THE PSYCHOLOGY OF MEDICAL PRACTICE—Marc H. Hollender, M.D. W. B. Saunders Company, Philadelphia & London, 1958.

The "art" of medicine is examined in a practical, useful way in this book, which should be in the library of every doctor. It helps in understanding the patient, but more specifically looks at the doctor-patient relationship.

For example, we as physicians often get into the bind of proving whether pain is "real" or "imaginary" and the question, "What would help the patient?" get shoved aside. The author also critically examines the concept of "normality," in relation to a patient's reaction to illness. He takes a fresh look at many of the time-honored attitudes and concepts of medicine and asks how they are a help or a hindrance to the best care of patients.

The first two chapters are spent looking at the doctor-patient relationship or the "medical situation" in general. Sections that follow are devoted to specific problems of the medical or surgical patient, the obstetric or the pediatric patient in health or illness, and the patient with carcinoma. The last two chapters focus on the use of medications and of non-medicinal prescriptions.

The book is written clearly and is easy reading. The reviewer recommends it highly as long as the suggestions stimulate further thought, rather than being used as the final answer.—A.R.H.

DETECTION AND MANAGEMENT OF EMOTIONAL DISORDERS—A. B. Stokes. *Canadian Medical Association Journal*, 77:971-974, 1957.

Detection and management of emotional disorders can be a function of the family physician. The doctor should not limit himself to concern with the control of emotional reactions to physical illness, but should also recognize primary emotional disorders by a systematic gathering of clinical data about the whole person. Human functions which should be considered include the manner in which crucial life experiences have been incorporated by the individual; the feelings manifested by the patient; and past personal relationships with key people, such as parents and siblings. Prolonged disturbances which find no resolution in a constructive repatterning of living may proceed to internal pathological adjustments such as acute and chronic hysteria, chronic anxiety state, hypochon-

driasis, psychosomatic conditions, phobias, obsessional states, depression and paranoid reactions.

Treatment methods available to the general practitioner, as distinguished from those of the specialist psychotherapist, are listed thus: "*authority*—more gentle and wise than aggressive and expert; *suggestion*—more leading and subtle than legal and direct; *persuasion*—more of the good teacher than the salesman; *ventilation*—to allow confession permissively to permit expletory anger; *ventilation with interpretation*—the interpretation should be in human terms, related to the patient's strivings, and tentatively submitted for his consideration." Therapeutic assets include a feeling tone responsive to the feeling of others and a willingness to accord time in proper measure. "Once the continuing emotional disturbance is positively identified, it must be tackled as surely as any organic disease."—C.E.B.

CURRENT THEORETICAL CONCEPTS OF PSYCHOSOMATIC MEDICINE—H. I. Kaplan and H. S. Kaplan. *American Journal of Psychiatry*, 115:1091-1096, 1959.

This article, read before the Fifth Annual Meeting of the Academy of Psychosomatic Medicine in 1958, demonstrates that thought in this area is still in a state of flux. Abstractions, rather than concrete facts are often called upon to explain the psychogenesis of certain physical illness. The authors feel that confusion arises on several points, and that there must be further advances in psychological theory and technique before these can be most effectively applied to medicine in general.

The authors go on to describe the various conceptualizations of psychosomatic illness. The specificity theory proposes that certain emotional reactions produce organic changes in susceptible individuals; while the nonspecificity theory assumes no definite correlations exist between the type of emotional reaction and the organic response. Proponents of both have used clinical and laboratory experimental techniques and can find evidence to support their ideas.

The authors' own theory arises out of a recognition of the limitations of the other two. They propose that many diseases result from a breakdown of psychological defenses, rather than from the emotional reactions themselves. They seem to favor multidisciplinary approach to psychosomatic thinking, utilizing

physiological, psychological, and sociological methods in understanding the individual patient.

The article ends on the hopeful note that the lack of conclusiveness will serve as a further stimulus for research and growth in this important area. I would recommend it for all those interested in a comprehensive approach to medical practice.—C.F.S.

THE NEUROSES IN GENERAL PRACTICE—V. P. Williams. *Medical Clinic of North America*. (Sept.): 1429-1438, 1957.

Dr. Williams, assistant psychiatrist at Massachusetts General hospital, reviews the neuroses as they are seen in the office practice of the general practitioner. He enumerates the origins of the neuroses, mentions theories of their origin, discusses the subjective symptoms, and points out their ubiquity. *He discounts secondary gain as a factor in most cases.*

Dr. Williams compares the neuroses and the psychoses, and emphasizes the frequency of depression and the importance of recognizing depression as distinguished from anxiety.

He warns against labeling an illness neurotic only because physical signs are absent at the time of examination. He lists broad areas of neurotic conflict as (1) social; (2) domestic; and (3) occupational. Like Freud he calls attention to the persistence of neurotic symptoms in spite of the patient's becoming consciously and rationally aware of his conflict. His illustrations of iatrogenic factors in neurosis seem especially pertinent and helpful. Dr. Williams did *not* urge the general practitioner to study his own long-repressed feelings more; such study might be rewarding, but how many general practitioners can find time to do this?—R.W.S.

CAN THE GENERAL PRACTITIONER DO PSYCHOTHERAPY?—Philip F. D. Seitz. *G.P.*, 19:126-133, 1959.

This article is directed to a question that has aroused a great deal of controversy in recent years. The author gives a qualified "yes" to the above question and then addresses the article to the important qualifications that determine whether and to what extent a general practitioner can do successful psychotherapy. This is a well written article and the author takes a rather conservative middle ground view of the problem with which most psychiatrists would agree. The article is divided into three parts: the doctor, the patient, and the type of psychotherapy.

Under the qualifications of the doctor, he says that the physician should enjoy doing this type of work and should be a relatively relaxed person so that he

is able to sit for long periods with the patient without directing the interview or interrupting the patient's productions. He stresses the point that the physician's own life situation should be sufficiently rewarding and gratifying so that *he will not use the psychotherapeutic relationship to provide personal satisfactions that should arise from non-professional sources.* Some physicians are motivated to practice psychotherapy because this provides an opportunity for them to be authoritative and bolster themselves through manipulating and controlling the lives of others. Unfortunately, this type of physician seldom recognizes this need within himself. The author believes that very few general practitioners have adequate training to do psychotherapy and holds that *they should obtain this training through postgraduate courses or through private supervision by a psychiatrist.*

The patient who is treatable by the general practitioner is one in whom the emotional disturbance is current and situational. These are patients who have adjusted well to life and develop emotional problems as a result of reality conflicts. The general practitioner should steer clear of patients with long standing illnesses and lifelong histories of poor adjustment. He should also avoid more serious psychiatric illnesses such as the psychoses, severe neuroses, and psychopathic disorders, and should probably not attempt to treat children.

Dr. Seitz believes that the physician should confine his treatment to supportive methods that do not involve extensive explorations of deep underlying problems. The general practitioner should primarily explore the patient's concerns and impulses regarding present conflicts and not uncover old deeply repressed conflicts of childhood. The physician can be most helpful by reassurance and sympathetic support of the patient's current strengths and the well aspects of his personality; by pointing out the patient's capacity for adjustment; and by assuring him that there are forces within his personality that are constantly striving toward health. He should help the patient regain a feeling of organization within his life so that the disturbing impulses, feelings, and thoughts are relegated to the background of his personality. He should praise the mature aspects of the patient's personality and try to strengthen and reinforce these elements of behavior. He should not bombard the patient with premature interpretations and explanations of his psychological functioning. The author briefly discusses ten cases to emphasize his points.

This is an excellent article to review if you are considering psychotherapy with a patient. The only disagreement that this reviewer would have with the article is that the author thinks the general practitioner should not attempt to treat the seriously ill psychiatric

patient. In general, he is certainly correct that this is not an area that should be entered into without some consideration. The reviewer believes that many general practitioners can do a good job of supportive psychotherapy with seriously ill patients who have been hospitalized and are in the recovery phase of their illness. These are patients who have had a thorough psychiatric evaluation. Usually the hospital psychiatrist can give recommendations about which conflictual areas of the patient's life to avoid. If the general practitioner has sufficient time and the inclination to work with these patients around their family problems and adjustment problems to the community, combined with the evaluation of intercurrent physical complaints, this can be a rewarding experience for the patient and the physician. Certainly the author's precautions about exploring the patient's underlying conflicts and the more pathological aspects of his personality should be strictly followed.—*T.B.S.*

SPECIALTY CONSULTATION IN THE FAMILY DOCTOR'S OFFICE—Howard F. Long. *G.P.* (Oct.), Vol. XVI, No. 4, pages 149-152, 1957.

The author, a general practitioner (generalist) in Dixon, California, describes a consultation arrangement which has worked well for him. He reviews the patients he has and determines which ones would be helped by specialty consultation. When he has a group of these patients, he arranges for the appropriate consultant to come to his (the generalist's) office. This arrangement has worked well with an internist and a psychiatrist, and could be applied to all specialty fields where special equipments are not needed for the examination. Some of the advantages are that it makes it easier for the patient to accept the referral, facilitates exchange of information helpful in treating the patient, and tends to incorporate consultation into the medical process rather than isolating it. Patients experience the consultation as a manifestation of concern rather than as a shifting of responsibility for, or a getting rid of, the patient.—*A.D.C.*

THE BORDERLINE PSYCHOTIC PATIENT—Milton H. Miller. *Annals of Internal Medicine*, 46:736-743, 1957.

It is to be hoped that this report of Dr. Miller's article will lead the physician to read it in its entirety and if so, it has been a good review. Dr. Miller's article should not be summarized since no summary can hope to convey the full content of his article.

There is scarcely a physician who will not recognize several of his patients in this article; further,

he will learn better how to treat them. Other physicians will be comforted in finding support in continuing their present treatment which so benefits these troubled people. Dr. Miller tells how these patients should be treated and shows why most of them should *not* be referred, let alone be transferred, to a psychiatrist. However, he includes the indications for referral. There is no cure for this illness, but the understanding, interest, and patience of the physician is the specific that maintains these patients without curing them, just as insulin sustains the diabetic without curing him.—*W.R.*

PSYCHIATRY AND THE PUBLIC HEALTH—G. R. Hargreaves. University of London, Heath Clark Lectures, 1957, delivered at the London School of Hygiene and Tropical Medicine. 118 pages, Oxford University Press, New York, 1958.

The British approach to psychiatry is evident throughout the book and the author begins by expressing his doubts of his ability to discharge this task of lecturing "worthily."

The early attitude toward mental illness was compounded of both fear and pity and until the 16th Century fear overwhelmed the voice of pity. The belief that the mentally ill were possessed rather than disordered did nothing to prevent the ill from being forced to live in conditions of squalor and cruelty. Pity for the mentally ill often came most loudly from the layman. However, it was with the changes initiated by a French physician at the end of the 18th Century that humane treatment of the mentally ill took hold.

Two aspects of psychiatry are noted and they are the problem of defects and child guidance, which the author hesitates to call "child psychiatry." Areas noted with which psychiatry shows close relationship are those of psychosomatic medicine and mental hygiene; the latter of which the author relates in turn to preventive medicine. Recent changes which are taking place are the developments of a closer relationship between psychiatric and other hospitals, between psychiatrists and other physicians, and the relationship between psychiatrists treating related areas of mental illnesses and the mentally defective.

Mental health is defined as more than the absence of disease or infirmity, but rather an aspiration for greater realization of human potentialities. Recognition that each society places characteristic demands upon the growing child with characteristic effects on personality and mental health, leads both psychiatrists and society scientists to stress the need to understand those effects, in the belief that they throw light upon the origins of human personality and on mental

health. *Man should attempt to modify his social and psychological environment in a way that would not only reduce his mental ills but enhance the development of his innate potentialities.*

The author devotes some time to the history of the administration at all levels in the care of the mentally ill. He also considers the family doctor and the responsibilities the doctor carries in treating psychiatric patients he can best handle, referring those who need intensive treatment to a specialist and understanding the patient as a person.

Consideration of psychiatry and public health practices is not made until the last chapter of the book. Elements of public health history are given and functions enumerated. An attempt is made to relate psychiatry to the work performed by the public health team by a statement that the psychiatrist and the psychiatric social worker can contribute to the efforts of the health visitor's skills in helping to train the health visitor for her role as health counsellor and guide to the family through the emotional problems of maternity and childhood, and in acting as a consultant to her in many aspects of her work.

The proposed function of the health authority is given as follows: "The function of the health authority—should be to help the psychiatric patient to find the treatment he needs, to help bridge over the gap between the patient and his family as well as the community in which he lives, to aid him in the process of rehabilitation and should he remain partially disabled, to provide him with such aid and protection as may enable him still to live in the community."—R.M.

These films are available free of charge from Health Education Services, Kansas State Board of Health, State Office Building, Topeka, Kansas. They are appropriate for showing to the local medical society and other professional groups.

A Character Neurosis With Depressive and Compulsive Trends in the Making: Life History of Mary From Birth to Fifteen Years silent 60 minutes

In this film we see a child with superior biological capacity and an active congenital-activity type develop a neurosis through interaction with those in her home environment. The film follows Mary's ego development from birth to seven years, illustrating how the so-called average child—in a family which society considers normal—may never be referred for needed psychiatric treatment. This situation is typical of thousands of children whose potentialities for development are never attained, although they outwardly conform to social standards of conduct. A superior and unusual film, for profes-

sional groups only—physicians, psychiatrists, psychologists, medical students, nurses, psychiatric social workers.

A Coronary 30 minutes

This film describes personality problems that were associated with the development of a coronary occlusion in a young man. Filmed interviews give insights into his emotional reactions to the experience. The film also elaborates psychological features involved in the rehabilitation process.

Activity Group Therapy 50 minutes

An exceptionally fine psychiatric orientation film produced for the Jewish Board of Guardians. For more than two years, hidden cameras and a microphone recorded the development, in activity group therapy, of a group of emotionally disturbed and socially maladjusted boys. It is thrilling to see the gradual improvement in these boys—the patience and understanding of the psychiatrist. By arrangement with the parents of the boys, this film may be shown only to professional audiences in medicine, psychiatry, correction, social work and guidance.

A Depression 30 minutes

This film gives a good picture of the symptomatology and dynamics of depressive illness, and discusses factors involved in treatment.

A Pathological Anxiety 30 minutes

This film discusses and illustrates the manifestations of anxiety in the patient, and contributes to the understanding of anxiety as a signal of psychological distress. Insights useful to the management of the anxious patient are provided by the film.

A Study in Maternal Attitudes 30 minutes

This documentary film is a psychological approach to the care of mothers and children in medical practice. Its purpose is to make the study and treatment of the emotional life of children and their mothers an integral part of pediatrics and the health supervision of infants and children. The showing of this film should be restricted to physicians, nurses, social workers and members of allied professions engaged in providing medical and related services to children and their parents; to students preparing for the above professions; and to such other persons as may have responsibilities of a non-professional nature in regard to the services referred to above.

Community Mental Health 31 minutes

Shows how a community, once it sees the need

for mental health facilities, can work together to achieve a broad mental health program. In this case they have the help of the consultant from the State Mental Health Agency, as they successfully establish a Mental Health Center, the functions of which extend far beyond the diagnostic and treatment services of the traditional clinic. For community groups.

Grief silent 30 minutes

This film shows the effect upon infants, caused by prolonged absence of the mother. Several babies in a foundling home are shown. It is indicated that, among the infants less than one year, if the mother returns after an interval of less than three months, their recovery is rapid. If the absence is prolonged beyond this period, it becomes impossible to achieve contact with them, and the babies become passive and apathetic, and begin to suffer damage to the personality. The film suggests that it is the emotional climate of the mother, which allows the child to develop normally, physically and mentally. For physicians, medical students, mental health specialists and social workers.

The Mental Health Year 56 minutes

An excellent documentary of the progress being made in mental health practices around the world today. We see how the same basic methods of therapy are adapted to various cultures and environments of the world. New advances, the result of ever-expanding concepts of mental treatment, are documented in this immensely interesting film.

These pamphlets, which are appropriate for patient distribution, are available free of charge from the Bureau of Community Mental Health Services, Division of Institutional Management, State Board of Social Welfare, Topeka, Kansas.

Alcoholism

Deciding What's Best for Your Retarded Child
Emotions and Physical Health

Facts About Alcohol

How Retarded Children Can Be Helped
Stress and What It Means to You

The Child Who Is Mentally Retarded

The Retarded Child in the Community

The Mind in Sickness and in Health

The Needs of the Mentally Ill

Mental Aftercare—Assignment for the Sixties

Understanding Your Teenager

Understanding Your Young Child

Your Community and Mental Health

A guide to public and private psychiatric facilities,

entitled "Mental Health Resources in Kansas," is also available from Community Mental Health Services.

Psychiatric Case Report

(Continued from page 17)

at the onset of her illness, and with the relapse, physical complaints were prominent. She described a choking sensation in her throat, pains in her neck, and pains in her arms and shoulders.

The treatment of this patient could have succeeded to the extent that it has only so long as there were open channels of communication between the family physician and the psychiatrist. Mutual trust and respect between the generalist and the specialist were necessary ingredients for working out a plan that offered this chronically and seriously ill woman effective assistance in coping with the considerable demands of being a wife and mother in a world where she feels cut off from communication with the people around her, and without anyone to turn to for understanding, assistance, and recognition.

NEW MEMBERS

The JOURNAL takes this opportunity to welcome these new members into the Kansas Medical Society.

Stevens B. Acker, M.D.
132 N. Minnesota
Wichita 14, Kansas

John D. Atkin, III, M.D.
1004 Madison
Yates Center, Kansas

George H. Christ, M.D.
The Snyder Clinic
Winfield, Kansas

Frederick M. Cluff, M.D.
327 N. Summit
Arkansas City, Kansas

William R. Doherty, M.D.
2108 W. 75th Street
Shawnee Mission, Kansas

Carmen R. Drummond, M.D.
V. A. Hospital
Wichita 18, Kansas

Milton Fader, M.D.
Kansas Neurological Inst.
Topeka, Kansas

Leland R. Kaufman, M.D.
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C. P. C. ~

Disorientation, Weight Loss, Cough, Hemoptysis and Abdominal Mass

Case Presentation

THIS WAS THE FIRST KUMC admission for this 46-year-old white man who was admitted because of weakness and cough. He had had a productive cough for several years. Three months before admission it became more severe, and two weeks before admission he began to have some blood in his sputum. He complained that he had had pain in the left chest and abdomen for two months, and members of his family noted that he had episodes of confusion with slurred speech. About that time he became incontinent. Three weeks before admission he was treated with oral penicillin, vitamins, and potassium iodide for an exacerbation of the cough. He had had no known fever, but he had slept in sweat shirts for about a month. When he did not respond to the treatment he was referred to this hospital.

He was in an automobile accident when he was 28 years old and was said to have sustained a head injury that made him unconscious for two months. The family said he had a metal plate in his head. There had apparently been no neurological residual following this injury. Five years before admission he was burned over the chest, hands and abdomen. He had had several fractured ribs.

He had been unemployed for approximately five years. He had smoked one to two packs of cigarettes daily for 25 years, and had been a chronic alcoholic. In the last eight months he had had a poor appetite and had lost over 100 pounds. There had been no symptoms of gastrointestinal bleeding. He had been incontinent of urine for several weeks.

The physical examination showed that he was a cachectic, confused and disoriented white man who

was unable to cooperate during the examination. He appeared acutely and chronically ill, and was unable to walk without help. He had hippocratic fingers, and there was marked muscular wasting of the extremities. The skin was somewhat pale; the turgor was fair; there was no cyanosis. The sensorium was clouded, and responses to questions were garbled and usually inappropriate. There was no evidence of trauma to his head, and percussion of the skull was normal. The left pupil was larger than the right. Ocular movements were normal. The sclerae were not icteric. The optic discs were flat. The ears and nose were normal. The oral mucous membranes were dry, and there was poor oral hygiene. The thyroid was palpable. There was no venous distention and there were no palpable lymph nodes in the neck. The patient's breathing was shallow, and there were decreased diaphragmatic excursions. The percussion note was dull and the breath sounds were absent below the seventh rib on the left side. There were questionable moist rales in the right base. The blood pressure was 110/-75, and the pulse rate 80 and rhythmical. The heart was not enlarged, and no murmurs were heard. There was generalized fullness over the epigastrium, and there was a 6 by 10 cm. mass but no fluid wave was felt. The right lobe of the liver extended to the iliac crest, and the edge was coarsely nodular. A friction rub was palpable and audible over the liver. The left testicle was atrophic. Rectal examination revealed no masses. Cranial nerves were intact. Sensory testing was unreliable, but the motor system was grossly intact. The deep tendon reflexes were hyperactive and equal. Unsustained ankle clonus was present.

The urine pH was 5.0; specific gravity, 1.012; albumin, heavy trace; sugar, negative; microscopic, numerous hyaline casts, 0 to 2 granular casts, 20 to 30 pus cells, and 0 to 2 red cells per high power field. The white count was 34,100 with 94 per cent poly-

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morphonuclears (92 per cent filamented), 5 per cent lymphocytes, and 1 per cent eosinophiles. The hemoglobin was 6.8 grams; hematocrit, 27 per cent; reticulocytes, 5 per cent; platelets, 204,000. The VRDL was nonreactive. The BUN was 51.5 mg. per cent, CO_2 , 29 mEq; sodium, 135 mEq; potassium, 4.0 mEq; and chloride 99 mEq per liter. The direct serum bilirubin was 0.1 mg. per cent; total, 0.4 mg. per cent. The total cholesterol was 79 mg. per cent with 73 per cent esters; cephalin flocculation, negative; thymol turbidity, 2 units; alkaline phosphatase, 4.8 mm. units; serum calcium, 8.1 mEq; and phosphorus, 2.5 mEq per liter. Serum albumin was 2.79 gm. per cent; serum globulin, 2.77 gm. per cent. The SGOT was 35 units. The serum iron was 17 gamma per cent with an iron binding capacity of 135 gamma per cent. Blood ammonia was 118 gamma per cent. The spinal fluid contained 2 red cells per cubic mm., no white cells, 29 mg. per cent protein (Pandy negative), 70.4 mg. per cent sugar and 680 mg. per cent chloride. The gold curve was 0123210000.

On the first hospital day a left thoracentesis was attempted, but no fluid was obtained. The patient's temperature was normal on admission, but on the first hospital day it rose to 101.2, and he was intermittently febrile during the remainder of his hospitalization. He was started on penicillin, chloramphenicol and intravenous fluids. With fluid therapy the BUN fell to 37 mg. per cent, and the creatinine to 1.5 mg. per cent. On the second hospital day the patient was given 3 grams of sodium edetate (sodium EDTA) intravenously. The following day his sensorium was clearer, and additional infusions of EDTA were given. The serum calcium values continued to run between 8 and 9 mEq per liter. On the morning of the eighth hospital day he began to vomit coffee-ground material, and blood transfusions were given. The blood pressure was stable, but tachycardia developed and persisted. He became unresponsive during the night and continued to have coffee-ground material in his gastric aspirate. He died quietly at 8:00 a.m. the following morning.

Dr. Mahlon Delp (moderator): Are there any questions for Dr. Kirkpatrick?

Mr. Jerome Thies (student*): Was a protein bound iodine done?

Dr. Charles Kirkpatrick (resident in medicine): No.

Mr. Thomas Gormley (student): Were tuberculin and histoplasmin skin tests done?

Dr. Kirkpatrick: No, they were not.

Mr. Monte Kahler (student): What were his dietary habits before admission?

Dr. Kirkpatrick: His dietary history was difficult to obtain. He lived with another man. He had been bedfast for about two months, and his food was primarily soup and things that had been prepared for him by his roommate. This man actually fed him for about a month prior to admission. He apparently had not been drinking for three months before admission.

Mr. Kahler: Did he have the gastrointestinal symptoms before admission?

Dr. Kirkpatrick: None that I know of.

Mr. Edward Halpin (student): Were there any other blood counts or urinalyses?

Dr. Kirkpatrick: Yes, there were five or six of each. The white count varied from 34,000 to 28,000 with more than 90 per cent polymorphonuclears. The urinalyses were much the same as the first one.

Mr. Robert Keys (student): Did the incontinence and hyperreflexia improve with the administration of the EDTA?

Dr. Kirkpatrick: No.

Mr. Thies: Did his roommate ever say why he wore his sweatshirt at night?

Dr. Kirkpatrick: He generally complained of being cold.

Mr. Gormley: Was there any history of jaundice?

Dr. Kirkpatrick: No.

Mr. Kahler: Was a gastric analysis done?

Dr. Kirkpatrick: No.

Mr. Halpin: Was any further description of the cough given?

Dr. Kirkpatrick: No, except he had what was thought to be a cigarette cough until three months before admission when the cough became productive of streaks of blood. Three weeks before admission was the first time he had anything like purulent sputum.

Mr. Thies: Was there any history of gross hematuria?

Dr. Kirkpatrick: There was none.

Mr. Keys: Was there any history of blood loss from any other portal?

Dr. Kirkpatrick: No.

Mr. Thies: Was the alkaline phosphatase repeated?

Dr. Kirkpatrick: Yes, two repeats were done, and both values were 1.7 mg. per cent.

Mr. Kahler: Was an acid phosphatase determination done?

Dr. Kirkpatrick: No.

Mr. Gormley: Was anhydrosis, ptosis or enophthalmos present on the right side of the face?

Dr. Kirkpatrick: No, except that I can't be sure about the anhydrosis.

Mr. Thies: Could you describe the abdominal mass any better?

* Although a student at the time of this conference in October, 1961, he, like the others referred to as students, received the M.D. degree in June, 1962.

Dr. Kirkpatrick: Yes, it was roughly 6 x 3 cm., and was hard. The friction rub was actually present over the mass. One could not delineate it from the liver edge.

Mr. Keys: Any other medications than those mentioned above?

Dr. Kirkpatrick: He had tetracycline, penicillin, multivitamins and potassium iodide.

Mr. Kahler: Was the left testicle palpable?

Dr. Kirkpatrick: Yes, it was palpable, but atrophic.

Mr. Gormley: Was the thyroid enlarged?

Dr. Kirkpatrick: The thyroid was palpable, but not enlarged.

Mr. Keys: Was there a history of mumps?

Dr. Kirkpatrick: I do not know.

Mr. Halpin: Was there any venous dilation over the abdomen? Any spiders angiomata?

Dr. Kirkpatrick: There was some venous dilation, but no spiders.

Mr. Thies: Did he have gynecomastia or a flapping tremor?

Dr. Kirkpatrick: Neither.

Mr. Gormley: Was the patient bronchoscoped? Was sputum examined for malignant cells?

Dr. Kirkpatrick: No, he was not bronchoscoped.

Mr. Kahler: What was the temperature course while in the hospital?

Dr. Kirkpatrick: His temperature was 101.8 on the first hospital day. About the fifth or sixth day he became afebrile for over a day. On the seventh day his temperature was 100 and it was 101.4 on the day of death.

Mr. Keys: When the lumbar puncture was done what was the opening pressure?

Dr. Kirkpatrick: It was normal, 10 mm. of water.

Mr. Halpin: Were there lymphadenopathy, skin lesions, or uveoparotitis?

Dr. Kirkpatrick: There was no lymphadenopathy. The only skin changes were those that I mentioned. He did have some burn scars on his hand and surgical scars on his scalp.

Mr. Kahler: Was an EEG done?

Dr. Kirkpatrick: No.

Mr. Keys: When were his ribs fractured?

Dr. Kirkpatrick: They were severely fractured in the automobile accident when he was 28 years old.

Mr. Thies: Was Babinski's sign present?

Dr. Kirkpatrick: No.

Mr. Gormley: Was a skin culture done?

Dr. Kirkpatrick: Yes, it yielded a moderate growth of nonhemolytic staphylococci and candida.

Mr. Keys: What was his respiratory rate?

Dr. Kirkpatrick: It ranged between 22 and 36 per minute.

Mr. Thies: Was the bilirubin repeated?

Dr. Kirkpatrick: Yes, there were two bilirubins: 0.3 and 0.6 mg. per cent.

Mr. Keys: Was a BSP done?

Dr. Kirkpatrick: There was 20 per cent retention of the dye.

Mr. Halpin: Were urine electrolytes done?

Dr. Kirkpatrick: Yes, the pH was 5.0; chloride, 3 mEq; calcium, 4.2 mEq, and phosphate, 41 mEq in a total volume of 250 ml. for 24 hours.

Dr. Delp: May we have the EKG's, Mr. Gormley?

Electrocardiogram

Mr. Gormley: There were two tracings made on this patient. The first was on the day of admission, February 25, 1961 (*Figure 1*). The rate was approximately 100. From the isoelectric lead 2 and prominent position AVL we conclude that there is some degree of left axis deviation. The T waves throughout the limb leads are somewhat flattened. In the precordial leads there seems to be a normal progression of the QRS complex, and the T waves are upright. There does not seem to be any specific ST segment in V2 to V5. There is also suggestion of shortening of the Q-T interval. I would interpret these findings as compatible with hypercalcemia. The second EKG shows essentially the same findings as the first. The rate continues at 100 and there is still left axis deviation. The ST segment is not very well defined. I would again consider this EKG compatible with the findings of elevated serum calcium.

Dr. Delp: Do you have any comments about the Q-T interval, Mr. Gormley?

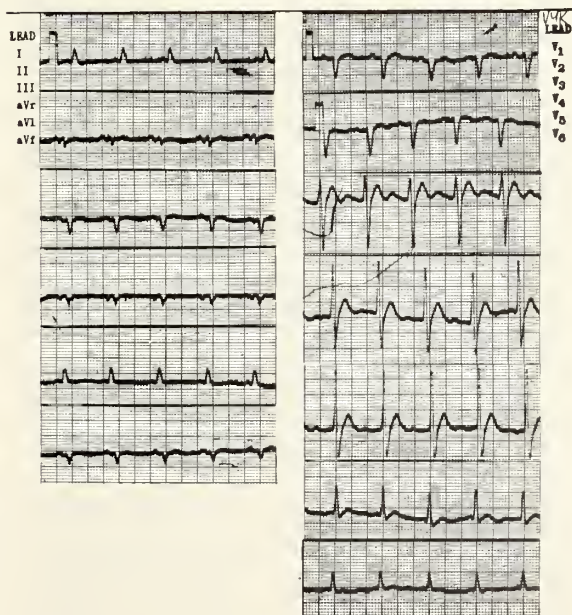


Figure 1. Electrocardiographic tracing made February 25, 1961.

Mr. Gormley: The Q-T interval is shortened to about 0.28 sec. which is somewhat short for this rate. I would expect it to be about 0.35 sec.

Dr. Delp: Thank you. Mr. Kahler, may we see the x-rays?

X-Rays

Mr. Kahler: First is a film of the abdomen which was taken on February 29 (*Figure 2*). The kidney shadows are not seen. The liver edge is about at the level of the iliac crest. I believe there is an area of rarefaction in the left ischium. I would interpret this x-ray as showing hepatomegaly, possibly ascites, and an osteolytic lesion in the left ischium. The chest film taken on March 4 was probably made with the patient in a supine position. The diaphragm on the right is at the level of the ninth rib. There is a patchy infiltration in the left chest. In the seventh rib there is callus formation and possibly some loss of cortical substance. On the fifth rib on the right there is also a finding that is probably the result of rib fracture with callus formation. However, the possibility of an abscess cannot be ruled out. I would interpret this as showing possible fluid in the left chest, a pneumonic process, or a chronic fibrotic process with a possible osteolytic lesion in the seventh rib on the left.

Dr. Delp: May we have your differential diagnosis, Mr. Thies?

Differential Diagnosis

Mr. Thies: Today's case is that of a 46-year-old white man with a history of weight loss, cough, hemoptysis, confusion, incontinence, alcoholism and excessive smoking. I will base my differential diagnosis on hemoptysis, epigastric mass, and hypercalcemia. Tuberculosis and other chronic pulmonary infections frequently present with coughing and hemoptysis, but these patients usually have fever, night sweats and positive skin tests, none of which were present in our patient. Sarcoidosis frequently causes a chronic cough and hemoptysis. Infiltration of the liver and spleen could cause similar findings with intracranial lesions bringing on cerebral dysfunction. Sarcoidosis also produces hypercalcemia. I will rule out this disease because of the absence of skin lesions, uveoparotitis, and lymphadenopathy. Hemorrhagic diseases such as leukemia and scurvy may be dismissed because the clinical picture is not compatible with such diagnoses.

Of the possible causes of hypercalcemia only primary and secondary hyperparathyroidism, vitamin D intoxication, multiple myeloma, and cancer seem capable of explaining these findings. Primary hyperparathyroidism is caused by parathyroid adenomas, hyperplasia or carcinoma. Characteristics of this condition are bone lesions, calcific deposits, weakness, anorexia, vomiting, weight loss, constipation, elevated



Figure 2. X-ray of abdomen taken on February 29, 1961.

urinary calcium and phosphorus, elevated serum alkaline phosphatase, elevated serum calcium, and low serum phosphorus. Secondary hyperparathyroidism is caused by chronic renal disease with retention of phosphates which causes stimulation of parathyroid activity, and results in findings similar to primary hyperparathyroidism. These two syndromes are dismissed because of the absence of typical bone lesions and renal insufficiency, and because of the normal serum phosphorus.

Anemia and hypercalcemia with nausea and vomiting should immediately suggest the possibility of hypervitaminosis D. Multiple myeloma is associated with renal damage, anemia and hypercalcemia, but the absence of bone pain and Bence-Jones protein makes this diagnosis improbable. The association of carcinoma and hypercalcemia will be discussed later.

Neoplastic diseases of abdominal organs include lymphomas and carcinomas of the colon, prostate, pancreas, liver, stomach and kidney. Lymphomas involving periaortic nodes with infiltration of the liver and lung could have caused all of our patient's physical findings. I rule this out, however, because of the absence of lymphadenopathy, splenomegaly and fever. Carcinoma of the pancreas, colon and prostate could produce findings similar to those in our patient. We rule these out in the absence of jaundice and gastrointestinal symptoms and because of the age of the patient.

Primary carcinoma of the liver in a patient with cirrhosis may give rise to a nodular liver or a solitary

mass with gastrointestinal disturbances and abdominal pain. Hematemesis occurs and is often terminal. The absence of jaundice, the changing liver function studies and the portal hypertension make this diagnosis unlikely. Carcinoma of the stomach is suggested because of weight loss, anemia, low serum iron, weakness, hematemesis and epigastric mass. This diagnosis is unlikely because of positive gastrointestinal symptoms, late hematemesis and the absence of typical x-ray changes. Hypernephroma may result in a great variety of symptoms. The classic triad of hematuria, pain and mass is seen in only 10 per cent. One study of a series of 273 cases lists hematuria in 50 per cent, weight loss in 41 per cent and a mass in 63 per cent. Ten patients presented with a cough or a lung mass. Hypernephroma with metastases to the lung could have produced our patient's symptoms. The abdominal mass could represent metastases to the liver or a kidney mass itself.

Some studies report that about 5 per cent of the cases of malignant disease with hypercalcemia are due to cancer of the kidney. Cough, hemoptysis, hypercalcemia and abdominal mass secondary to hypernephroma without gross hematuria is tenable, but statistically very unlikely. We cannot absolutely rule out this diagnosis. We will now consider neoplasm of the lung. Sarcomas are ruled out because of rarity and because of an atypical clinical course. Metastatic tumors of the lung occur more frequently than primary tumors, but metastases are less likely to cause bronchial obstruction and hemoptysis and we therefore rule them out. Bronchogenic carcinoma has shown a startling increase in incidence in the past few decades and is the most common cause of death from cancer among males. The greatest increase has been in the squamous and undifferentiated types with the preponderance of cases between the ages of 40 and 70. The local effects are largely those of irritation, ulceration, neural invasion and bronchial obstruction causing pneumonitis, bronchiectasis or abscess. Metastases from bronchogenic carcinoma are found in the opposite lung, regional lymph nodes, liver, adrenals, bones, veins and other tissues and they can cause a variety of symptoms. Extrapulmonary manifestations of bronchogenic carcinoma may cause symptoms unrelated to metastatic spread. Some of these manifestations as demonstrated by our patient defy explanation from current concepts of neoplasia. In recent years hypercalcemia has been described with malignant tumors in the absence of osseous metastases. Hypercalcemia has been reported with hypernephroma, Hodgkin's disease, hemangiosarcoma and bronchogenic carcinoma. Because the removal of primary lesions led to a prompt return of the serum calcium to normal, and because recurrence of hypercalcemia was associated with recurrence of the tumor it has been postulated that the hypercalcemia was due not to bone metastases but to a substance in-

troduced into the circulation by the tumor. One review of a series of ten such patients described high calcium, normal serum phosphorus and normal or elevated serum phosphatase, and postulated the formation of a parathormone-like substance. Another possibility is that the tumor produces a vitamin D-like compound. Neurological changes and motor weakness are also frequently associated with carcinoma of the lung as are connective tissue changes, osseous abnormalities and hypertrophic osteoarthropathy. Also seen are migratory thrombophlebitis, blood dyscrasias and hemolytic anemia.

We feel that we can adequately explain our patient's symptoms and findings with a diagnosis of bronchogenic carcinoma of the lung (with metastases) and alcoholic cirrhosis. In addition to the presenting complaint and the findings suggesting carcinoma of the lung, slurred speech, confusion and incontinence were noted for two months. On admission the patient was lethargic and unable to cooperate. Anisocoria, hyporeflexia and unsustained clonus were also present. These abnormalities can be considered as evidence of widespread central nervous system disease and non-localizable lesions. Several authors, in describing symptoms and signs associated with hypercalcemia, list anorexia, drowsiness, dysarthria, confusion, weakness, lethargy, disorientation, malaise, positive Babinski and dehydration. The patient was treated with sodium edetate with the result of temporary clearing of sensorium, but there was no drop in the serum calcium. Chronic hypercalcemia is associated with peptic ulcerations. Hypertrophy of the gastric mucosa, chief cell proliferation and increased hydrochloric acid may be responsible for these ulcerations. Such a phenomenon would well explain the terminal events and the immediate cause of death. In view of the fact that carcinoma of the lung metastasizes to the brain in about 30 per cent of the cases and that 75 per cent of the brains with metastatic disease have multiple metastases, we cannot overlook the obvious possibility that this may have been the cause of the central nervous system dysfunction. In cases with a lesion of the hypothalamus the formation of ulcerative gastritis and gastrointestinal bleeding is a common cause of death. We cannot definitely say which of these phenomena occurred. We favor the latter as an explanation of the terminal event.

Dr. Delp: Thank you. Your diagnosis, Mr. Keys?

Mr. Keys: Bronchogenic carcinoma.

Dr. Delp: Mr. Halpin, what is your explanation for these central nervous system signs that have just been described?

Mr. Halpin: They could have been the result of widespread cranial metastases or of the elevated serum calcium.

Dr. Delp: What is your explanation of the friction rub which was reportedly heard over the epigastrium,

Mr. Keys?

Mr. Keys: Metastases to the liver.

Dr. Delp: Why did this patient lose 100 pounds in about five months?

Mr. Keys: This is a common finding in patients with malignant tumors. Furthermore, he had not been eating.

Dr. Delp: Mr. Kaufman, what is your explanation for this man's anemia? When he arrived here his hemoglobin was 6.8 grams per cent. Even after six transfusions he still had only 10.5 grams per cent of hemoglobin.

Mr. Kaufman: Anemia is often seen in a patient with chronic blood loss from peptic ulcer, and especially if they have a large intake of alcohol.

Dr. Delp: Do you think that a bone marrow biopsy would have been helpful in diagnosis in this case?

Mr. Kaufman: No, I do not think so.

Dr. Delp: What do you think the significance of the metal plate in this man's head was? According to the history he had had a metal plate in his head for 18 years.

Mr. Kaufman: It was probably the result of a previous fracture.

Dr. Delp: We were told that this man was getting intravenous vitamin D and calcium preparations. Does that have any bearing on the present problem?

Mr. Keys: It is quite significant.

Dr. Delp: Mr. Keys, would you account again for this bloody vomitus which he had terminally?

Mr. Keys: I would attribute it either to intracranial metastases with a lesion localized in the hypothalamus or to the general effect of intracranial tumors affecting the hypothalamus. These are commonly associated with an ulcerative gastritis. I know the explanation is not clear, but it is a frequent terminal event.

Dr. Delp: Mr. Keys, what is your explanation of the effect of the EDTA that was given to this patient? He was given quite a bit a number of times. Would you have expected this to alter the serum calcium?

Mr. Keys: Normally EDTA, as a calcium chelating agent, does lower serum calcium, but this effect is not usually produced when hypercalcemia is secondary to metastatic bone disease.

Dr. Delp: Then you think this hypercalcemia was secondary to metastatic bone disease.

Mr. Keys: At least partly.

Dr. Delp: Is that your opinion, Mr. Gormley?

Mr. Gormley: No, I think it was probably due to a parathormone-like substance.

Dr. Delp: Dr. Berry, may we have your comments?

Dr. Maxwell G. Berry (internist): If the ingestion of such moderate amounts of alcohol leads to cirrhosis of the liver at 46 years of age the history is probably a little bit wrong, but he could, of course, have cirrhosis of the liver too. I am tempted to say

that he did not have anything besides bronchogenic carcinoma. I would be a little disappointed in the spinal fluid findings if the normal protein which this man had accompanied the widespread infiltration of the meninges with tumor. A tumor lying on the surface of the brain would be expected to produce an elevated spinal fluid protein. If it were not on the surface of the brain and accounted for all the patient's symptoms he should have had some localized motor area involvement. I would like to postulate he did not have very much metastasis to the brain. I doubt very seriously if he had a widespread cirrhosis of the liver, and I imagine that there is a distinct possibility that Dr. Delp has trapped us all.

Dr. Delp: How many times do you think a cirrhotic liver is the site of metastatic growth?

Dr. Berry: A recent article in the J.A.M.A. showed that in carcinoma of the lung with metastases to the liver previously reported 50 per cent normal livers as sites, and 60 per cent cirrhotic livers.

Dr. Martin J. FitzPatrick (internist): This is a fascinating case. I agree with the diagnosis that has been offered just on the basis of probability. This was a 46-year-old man who smoked and who coughed three months prior to admission and had hemoptysis. I would assume that the blood spitting continued, and this would signify to me that he had an ulcerating lesion in his bronchus. He deteriorated farther. I would agree that the most likely cause for this would have been a primary bronchogenic carcinoma in his left lower lobe that spread out into his mediastinum and possibly down into this abdomen. I agree with the explanation that has been offered for the hypercalcemia.

There are some points that are disturbing. If the tumor has been there for this long a period of time one would expect to see more local evidence of it, and to see some shift of the mediastinum. In addition, the tumor appeared to be in the left lower lobe. We are told that fluid could not be obtained, and the radiologist pointed out that the roentgenographic picture was not that of a pleural effusion. The other disturbing thing about the terminal course of this patient is that he had a friction rub over his liver, and he had a leukocytosis, a spiking fever, and a large liver. You will see many patients with carcinoma of the lung with metastases to the liver, and they will die. You will not, however, see many friction rubs associated with this. So, I would say that he had sepsis. I would also suggest that he probably had a bacteremia and had an abscess. Whether it was amebic or not I could not say, but I would strongly suspect that he had a rather large pocket of pus in his liver.

Dr. Delp: Thank you, Dr. FitzPatrick. Dr. Bolinger, do you have any comments?

Dr. Robert E. Bolinger (internist): I believe it was mentioned that the EDTA did not correct this

man, and it was therefore thought that the hypercalcemia was not accounting for his encephalopathy. EDTA usually clears the sensorium somewhat, and this was true in this case. The response that one gets from EDTA in hypercalcemia is present only as long as the intravenous drip is running. The EDTA is excreted rather rapidly, so it does not last very long, and is used only as an emergency measure in certain circumstances. I do not think this rules out the probability that his central nervous system symptoms were caused by hypercalcemia. About the genesis of the hypercalcemia—the phosphorus level seems a little bit too high to suggest to us that he had either a parathormone-like substance or hyperparathyroidism. I assume that the phosphorus level stayed up, but we have no subsequent determinations to confirm or deny this. Another disturbing feature is the fact that there was only a very small amount of calcium present in the urine—only about 60 milligrams in a 24-hour period. With this much hypercalcemia the patient should have had a lot of calcium in the urine if the calcium was ionized. The electrocardiogram tells us it probably was ionized because it did give a short Q-T interval. On that basis, I would have to say that the hypercalcemia was very likely related to the bone metastases. I doubt that it was caused by a parathyroid-like substance, although I am sure that no one will either be able to prove or disprove it. One other point about treatment: cortisone would probably have handled this type of hypercalcemia most readily in the long run. Certainly EDTA is indicated in the short term. One should remember that these patients frequently die of pancreatitis because a high level of calcium activates trypsin before it leaves the pancreas.

Dr. Delp: Dr. Allen, this patient was your problem. Do you wish to comment?

Dr. Max S. Allen (internist): I do not think that I can contribute very much here except to say that we were also faced with the fact that we had almost too much information on this patient. As an explanation for his hypercalcemia—vitamin D ingestion, a tumor of the type known to produce hyperparathyroid-like response, and bony metastases. I think the opinion was that, particularly in view of the normal spinal fluid protein, his mental symptoms of confusion and behavior disturbance were probably on the basis of hypercalcemia, and that the hypercalcemia probably was a combination of vitamin D ingestion and bony metastases. At least this seems to be enough of a reason for it. Again, as Dr. Bolinger pointed out, the phosphorus seemed to be too high for an excessive parathyroid function, but serum phosphorus may be elevated in the presence of renal insufficiency. In this instance, however, the calcium should have been decreased, but it was not. There was a rather significant response of this man's sensorium after he got EDTA.

The terminal bleeding, we thought, was from a gastritis syndrome. Dr. Bolinger's comments about the inception of pancreatitis in hypercalcemia are well taken, and this certainly could have also been a factor in the production of a gastritis-like syndrome.

Pathological Report

Dr. Howard Fink (pathologist): At autopsy this man was well-developed but poorly nourished, and showed pronounced clubbing of his fingers and toes. The lungs were firmly bound to the chest walls by fibrous adhesions; these were especially dense over the left lower lobe, where the parietal pleura was studded with nodules of firm white tumor tissue. The upper three-quarters or so of the left lower lobe was occupied by a tumor mass which involved and completely obstructed the left lower lobe bronchus a few centimeters distal to its origin (*Figure 3*). This tumor had extensively penetrated the visceral pleura. Much of it was necrotic and consisted of a grumous semi-fluid mass. The viable portions had a hard yellowish-white somewhat granular cut surface. Beneath and lateral to the tumor the identifiable lung tissue was compressed and atelectatic, containing dilated, mucous-filled bronchi and foci of bright yellow consolidation typical of the "cholesterol pneumonia" which is a frequent sequela of long-continued bronchial obstruction. On microscopic examination the tumor proved to be a moderately well-differentiated squamous cell carcinoma (*Figure 4*): and sections of the consolidated lung distal to the tumor showed the expected packed

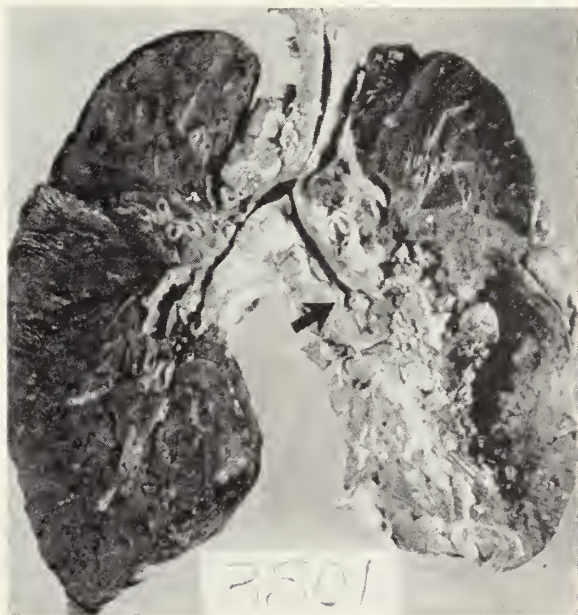


Figure 3. Posterior halves of lungs. Left lower lobe bronchus (arrow) obstructed by tumor which replaces central portion of left lower lobe and shows cavitory necrosis.

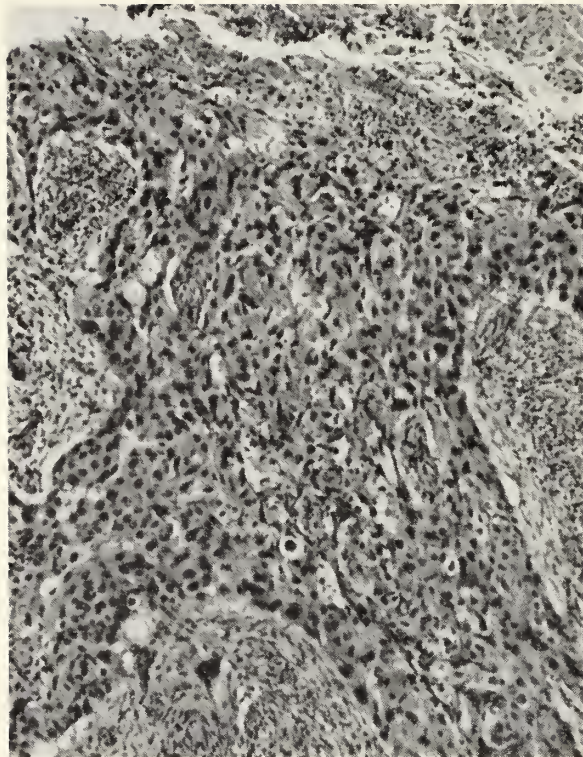


Figure 4. Invasive squamous-cell carcinoma in wall of left lower lobe bronchus. Hematoxylin-eosin, $\times 96$.

masses of foamy, lipid-laden macrophages about ectatic bronchi and in alveoli (Figure 5).

The liver was enormously enlarged, weighing 4450 grams; approximately half of this mass consisted of metastatic tumor nodules of varying sizes. The largest of these, about 10 centimeters in diameter, bulged beneath the capsule of the upper anterior aspect of the right lobe of the liver. It seems reasonable to conclude that this nodule was the source of the unusual friction rub heard during life, since a fibrinous exudate appears on the serosal surface of the liver in several of our sections, and the abdominal cavity contained about 1500 cc. of clear ascitic fluid. Except for the tumor and its compression effects, the liver appeared histologically normal, and there was no evidence whatever of cirrhosis. The left adrenal gland contained a solitary metastatic deposit about 3 centimeters in diameter.

The brain contained a single metastasis; this was located just beneath the cerebral cortex of the left middle frontal gyrus, a centimeter or two anterior to the precentral gyrus. This lesion measured 3 centimeters in its greatest diameter, and showed central cystic degeneration. The brain tissue immediately surrounding it was noticeably edematous; but there was no discernible generalized cerebral edema, and the brain was not abnormally heavy. Several smaller cysts, filled with amber fluid, were noted in and beneath

the cortex of the left temporal and both frontal lobes and over the basal aspect of the cerebrum; on histologic examination, however, these proved to have walls of old, unreactive glial scar tissue, and are presumed to be the residua of the traumatic injury which this man suffered several years before his death.

No lymphogenous metastases were found, except for deposits in the tracheobronchial lymph nodes at the hila of both lungs.

Perhaps the most interesting findings in this case were those associated with the patient's hypercalcemia. The kidneys were considerably enlarged, weighing together 575 grams, and were somewhat softened, but were not otherwise grossly abnormal except for the presence of a small metastatic tumor nodule in the right kidney near its hilum. In particular, no renal or ureteral calculi were present. Histologic sections, however, showed a significant degree of nephrocalcinosis, many of the tubules, principally proximal convoluted tubules, containing calcific masses (Figure 6). Degenerative changes and intracytoplasmic calcium granules were noted in the tubular epithelial cells adjacent to the calcific casts (Figure 7). The tubular calcification was not as extensive as is frequently seen in nephrocalcinosis associated with hypercalcemia, per-

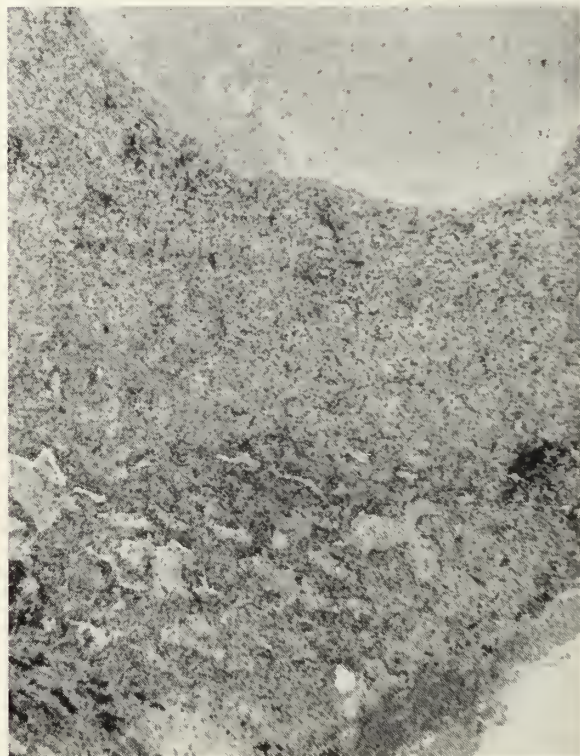


Figure 5. Obstructive pneumonia in base of left lower lobe. Above, dilated mucous-filled bronchus; zone of lipid-laden macrophages across center of photomicrograph; below, patent alveoli containing similar macrophages. Hematoxylin-eosin, $\times 48$.

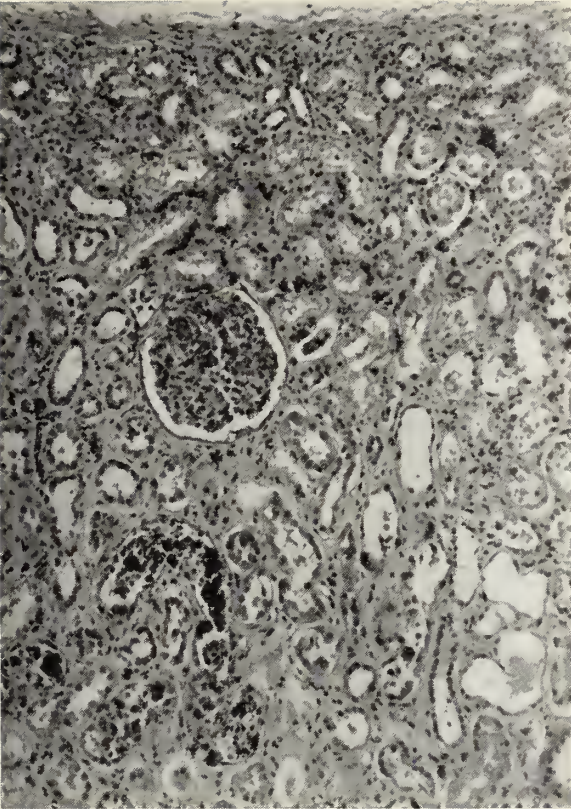


Figure 6. Kidney. Interstitial edema; lower right, dilated tubules; lower left, calcific tubular casts and calcification of tubular epithelium. Hematoxylin-eosin, $\times 96$.

haps four or five tubules per scanning power field being involved. An associated acute nephrosis was also present, however, and was evidenced by vacuolar degeneration of proximal tubular epithelium, tubular dilatation, and an appreciable degree of interstitial edema. The glomeruli appeared normal. The renal tubular lesions are certainly severe enough to account for the patient's rather mild azotemia.

Metastatic calcification was also found in a few sections of lung in the form of fine dusty calcific deposits in the walls of alveoli and small blood vessels. This lesion was noted only in a single lobule of the left upper lobe, in and near an area of early bronchopneumonia. I am unable to account for this curiously localized distribution, except on the rather hazy basis of increased local tissue alkalinity.

No evidence of metastatic calcification was seen in several sections of stomach. Focal deposits of finely granular calcium were noted, however, in tumor tissue in several sites and also in small venous thrombi which were closely related to metastatic tumors in several organs, particularly the liver, left adrenal, and right kidney.

Bone lesions correlating with the hypercalcemia were slight but widespread and of great interest. The

only metastatic tumor discovered in bone was a single deposit in the right fifth rib. This metastasis was associated with a pathologic fracture. The limb bones were not investigated, nor, unfortunately, was the osteolytic lesion noted clinically in the ischium. Although metastatic tumor was scanty, there was evidence of diffuse bone resorption in all sections of bone examined. The lesions noted were histologically indistinguishable from a mild form of the osteitis fibrosa generalisata associated with hyperparathyroidism. They consisted of zones of loose areolar connective tissue surrounding many of the bone trabeculae of the marrow coupled with a ragged, indented, moth-eaten appearance of the borders of many of the trabeculae, and unusually large numbers of active-appearing osteoclasts lying adjacent to bone spicules (Figure 8). These changes were not severe enough to produce any obvious osteoporosis, and no cysts or "brown tumors" were discovered. This dissolution of bone stands in contrast to the findings of Plimpton and Gellhorn who stated that they failed to find evidence of bone resorption in any of their seven patients that came to autopsy. These authors doubted, therefore, that the tumors in any of their cases exerted a true parathyroid-like action. Connor, Thomas and Howard, however, investigating two patients with carcinoma of the lung plus hypercalcemia, somewhat similar to the present case, did find lesions resembling those of osteitis

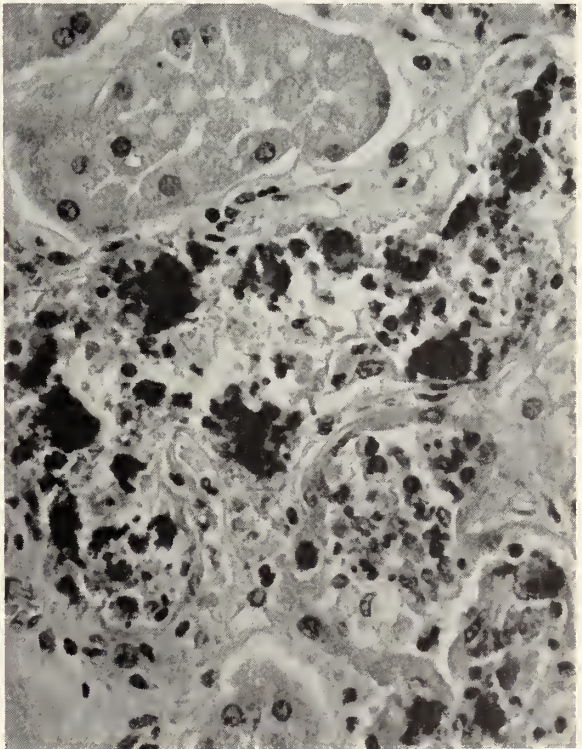


Figure 7. Renal tubule with degeneration and calcification of lining epithelium. Hematoxylin-eosin, $\times 400$.



Figure 8. Bone (sternum). Bands of cellular connective tissue bordering bone trabeculae and containing multinucleated osteoclasts. Eroded, ragged-edged trabecula at left center. Hematoxylin-eosin $\times 200$.

fibrosa generalisata in both at autopsy. A direct parathyroid-like action of the tumor seems the simplest, though certainly not the only possible explanation for such bone changes. Attempts to extract a parathyroid hormone-like substance from such tumors have so far been unsuccessful.

We were unable to demonstrate the parathyroid glands in the present case in spite of extensive dissection. Our failure at least suggests that the parathyroids were not hyperplastic.

The terminal gastric bleeding was easily traceable at autopsy to a small acute gastric ulcer with a small artery in its base.

In summary, this patient had a squamous cell carcinoma of a major bronchus which gave rise to a pattern of blood-borne metastases common for such a tumor, and also, by some as yet unexplained mechanism, produced hypercalcemia. Metastatic calcification of kidney and lung resulted from the hypercalcemia. Evidence of bone resorption points to bone as the source of the excess circulating calcium, and suggests the possibility of a direct or indirect parathyroid-like

action of the tumor as the fundamental cause of the hypercalcemia. The terminal events were bronchopneumonia and hemorrhage from an acute gastric ulcer.

Dr. Delp: Thank you, Dr. Fink. Are there any questions for Dr. Fink?

Mr. Thies: Was gastric or pancreatic calcification present?

Dr. Fink: No. I looked carefully for calcium in the stomach, appreciating that this was a very likely site for metastatic calcification to occur and found none. Neither was there any in the pancreas.

Mr. Halpin: Did you look at the left testicle?

Dr. Fink: It was focally fibrotic. Fibrosis was non-specific and old, but we have no idea what the cause was.

Mr. Kahler: Would you tell us more about the adrenals?

Dr. Fink: The right adrenal contained a large metastasis. The left adrenal was normal except for some lipid depletion.

Dr. Delp: Thank you, Dr. Fink. This is another case that offers clues to unlocking some mysteries in medicine. I would like to emphasize the central nervous system signs and symptoms which this patient had because I think these should be apparent to the clinician. This represents the third such case seen on the medical service in the past six months.

Pathological Anatomical Diagnosis

Squamous cell carcinoma of main bronchus, lower lobe of left lung, with large necrotic cavities, metastases to the hilar nodes and left pleura, massive multiple metastases to the liver, and solitary metastasis to the left adrenal, right kidney, brain and right fifth rib.

Osteitis fibrosa, slight, of sternum, vertebrae and one rib.

Metastatic calcification of renal tubules (nephrocalcinosis) and upper lobe of left lung.

Ascites, 1500 cc.

Focal acute bronchopneumonia, both lungs.

Acute ulcer of stomach.

References

1. Connor, T. B., Thomas, W. C., Jr., and Howard, J. E.: The etiology of hypercalcemia associated with lung carcinoma, *J. Clin. Invest.* 35:697, June, 1956.
2. Knowles, J. H., and Smith, L. H.: Extrapulmonary manifestations of bronchogenic carcinoma, *New Eng. J. Med.* 262:505, March 10, 1960.
3. Plimpton, C. H., and Gellhorn, A.: Hypercalcemia in malignant disease without evidence of bone destruction, *Am. J. Med.* 21:750, November, 1956.

I have often thought morality may perhaps consist solely in the courage of making a choice.

—Leon Blum

The President's Message

DEAR DOCTOR:

The year of 1963 has arrived with its challenges, some of which will not be solved in the next twelve months. Many of them as they are resolved will only confront us with other challenges for this denotes the development of an evolving society.

One might take a few minutes to consider what he could do in 1963. The idea of improvement comes to mind. This improvement could cover any one of several areas. Direction should be given toward the Kansas Medical Society, the component county medical society, the relationship between physicians, the relationship with our allied professions, the health care of our citizens, and the improvement of each of us individually in the evaluation of our activities and thoughts.

As ideas in a given area occur they should be written down. An evaluation of the idea should then be made as to its advantages and disadvantages. A final summation as to whether it promotes selfish intent or has the quality of being beneficial in a broad manner must be considered.

Improvement can be made when the correct approach occurs unselfishly and with intelligence. The medical profession will continue to produce benefits for our society in this new year as it devotes its attention to to these challenges for improvement.



Norton L. Francis M.D.

President



Editorial COMMENT

(Address by George M. Fister, M.D., President, American Medical Association, to the AMA House of Delegates, at the Biltmore Hotel, Los Angeles, California, November 26, 1962.)

... The progress of medicine in this nation is one of the most dramatic stories of the century.

Let's look at a few pages of the record:

- 4½ million Americans are alive today who would be dead if the mortality rate of 25 years ago still prevailed. And these 4½ million people earned almost 10½ billion dollars in 1960.
- For the first time in our history, life expectancy for Americans has exceeded the Biblical three score and ten years, and it now stands at 70.2 years.
- 80 per cent of the drugs commonly prescribed today were unknown just ten years ago.
- The United States has made more important drug discoveries in the last two decades than all the rest of the world combined, or seven times as many as the next leading country.
- Just last year the prescription drug industry set a new record of 245 million dollars in research, an investment triple that of the average industry.
- There now is a record number of hospital beds in this country—one million, 670 thousand, an increase of more than a quarter million beds since 1948.
- The average stay in a hospital is at its lowest in history.
- During the year, infant mortality rates declined to the lowest in United States history, 25.3 deaths per 1,000 births.
- A record number of 7,168 new physicians graduated from U. S. Medical schools this year, and a record number of 31,078 students are enrolled in medical schools.

Address by A.M.A. President

—In 13 years this nation built 763 new hospitals, increasing the total number of hospitals to almost 7,000.

—A record number of Americans, 136 million, is covered by voluntary health insurance and prepayment plans.

I could go on and on enumerating medical milestones.

These accomplishments did not "just happen." They came about because researchers, medical scientists, and physicians have had an opportunity to work in an atmosphere of freedom.

Achievement and freedom are not unrelated. . . .

When I was a young man, I went abroad to London and Vienna to continue my medical education. Many American physicians went abroad to study in those days.

Today the reverse is true. Today physicians and medical students from foreign lands are coming to this country to study medicine under our great teachers. Right now there are nearly 9,000 foreign physicians and students studying medicine in the United States.

What more important commodity can this country export than to send these physicians home to their native lands with the broad medical knowledge learned in the medical classrooms and hospitals of America? . . .

It is a fact that physicians, in effect, strive daily to reduce the need for their services.

It is a fact that the drug industry progresses only because it seeks to make its own products obsolete.

It is a fact that while hospitals endeavor to provide the best kind of care and service, they labor to reduce the length of stay of the patient, now at its lowest in history.

It is a fact that the health insurance industry is interested in seeing that everyone is covered with the best possible protection at the lowest possible cost.

Today two-thirds of those who now are admitted

to mental hospitals are discharged the first year. But 30 years ago a patient entering a mental hospital could expect to remain there up to 30 years or even the rest of his life.

Death rates of acute rheumatic fever and influenza are down about 85 per cent since 1944.

Today one out of every three cancer patient survives whereas only one out of seven survived in 1937.

Only 40 years ago one in every four subject to a major operation died. Today only one in 100 dies and operations are performed now that were impossible only a few years ago.

And today the American people are getting more for their health care dollar than any time in history. They spend only six cents out of every dollar on health care. They spend almost as much on liquor and tobacco and three times as much on recreation and travel.

The people are getting far better medical care than any time in history and the cost of this care is in line with the cost of other services and commodities.

It is true that the average prescription cost is \$3.21 today compared with the average cost of 91 cents in 1939. But the average wage earner works 18 minutes less today to buy this drug that has remarkable curative and preventive powers and will return him to good health quicker and safer than ever before.

This medical progress has given millions a chance to live when they might have died a few years ago. And the science of medicine is constantly progressing, always reaching upward toward the goal of a world free from the fear of serious illness.

As physicians we are eagerly awaiting the day of organ transplants, greater cancer control, preventives for some types of heart disease, cures for multiple sclerosis and cerebral palsy, and new inroads against other killers and cripples. . . .

Hundreds of county medical societies have purchased advertising space in their local newspapers to inform the citizens that no one need go without physician services because of the lack of funds.

Surveys show that the medical profession annually gives more than 700 million dollars in free medical care. . . .

Most of us thought when we graduated from medical school and entered practice that if we practiced good medicine, if we kept pace with the advances in medical science, and if we were dedicated and devoted to preserving and prolonging life, to alleviating suffering and pain, to conquering disease, then we would have fulfilled our responsibilities to the public.

That may have been enough to give a few years ago, but it isn't enough today.

Today we must tell the true story of American

medicine to the people. We cannot stand by and permit a few to defame the medical care system that has had such a profound effect on the lives of so many. . . .

A final word of caution—let us not permit ourselves as a profession to compromise our basic principles. Nor should we endanger our position—as set forth by this House of Delegates—by the adoption of policy statements which commit the profession to a course of action that could be intentionally or unintentionally misinterpreted and generate serious misunderstanding on the part of the public.

We cannot give ground on basic principles. There is no substitute for freedom in medical practice, and there never will be. There is no substitute for the private relationship of patient and physician, and there never will be. There is no substitute for voluntarism, and there never will be. . . .

We can justify our present position because it is sound. We believe in helping those who need help, and we believe that the solvent and self-reliant should help themselves.

Can anyone argue with that?

Our position is sound because we have supported and still support the Kerr-Mills Law which is designed to help those who need help without dissipating the tax resources of the nation's workers and their employers by providing health care to the millions of the aged who are not in need. Our position is sound because we believe that the Kerr-Mills Law, properly implemented by the states to help all the aged who need help, and voluntary health insurance and the prepayment plans, protecting those who are able to take care of themselves, will solve whatever problems exist among the aged in financing medical care.

The people will respond to the truth, and it is imperative that we as individuals and as an organization see that they get the truth.

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**YOUR LIBRARIAN WILL BE
HAPPY TO ASSIST YOU**

AMA Clinical Meeting

Report on Actions of the House of Delegates

Health care for the aged, medical ethics, graduate medical education, expansion of the AMA Board of Trustees and a study of the sections and scientific program of the AMA were among the major subjects acted upon by the House of Delegates at the American Medical Association's Sixteenth Clinical Meeting held November 25-28 in Los Angeles.

In keynoting the Association's attitude toward Social Security health care for the aged, Dr. George M. Fister of Ogden, Utah, AMA president, told the opening session of the House: "We will not compromise on the fundamental principles in which we believe and for which we have fought in the past with courage and good judgment. We will not jeopardize our position either by indicating a willingness to consider a compromise which would damage our basic principles, or by hasty action which might be misinterpreted."

Dr. Fister urged the entire medical profession to understand the basic issues in this struggle so that they can recognize the difference between compromise and surrender.

The House reaffirmed, without compromise or change, the Association's present policy of opposition to the King-Anderson type of legislation and support for the Kerr-Mills program. In so doing, it also approved in principle the following suggested amendments to the Kerr-Mills Law:

1. Remove the requirement that both Old Age Assistance (OAA) and Medical Assistance for the Aged (MAA) programs be administered by the same agency;
2. Provide flexibility in the administration of the income limitations proposed under state law so that a person who experiences a major illness may qualify for benefits if the expense of that illness, in effect, reduces his money income below the maximum provided;
3. Include a provision in the law requiring state administering agencies to seek expert advice from physicians or medical societies through medical advisory committees; and
4. Provide for "free choice" of hospital and doctor under state programs.

At the same time, the House also endorsed in principle four proposed amendments to the Internal Revenue Code, designed to assist in financing the medical and hospital expenses of the aged. These amendments would: liberalize tax deductions for medical expenses of dependents over age 65; remove the 1 per cent

drug limitation and include drugs as medical expenses; permit taxpayers over age 65 to receive full tax benefit for medical expenses by use of the carry-forward and carry-back principle, and provide a tax credit for medical expenses paid by the over age 65 taxpayer, proportionate to the relation between his medical expense and taxable income.

The House also approved a status report which concluded with this statement: "It is our strong conviction that the legislative situation, the expanding health insurance and prepayment coverage, the improving economic status of the aged, and the many other factors cited in this report require that we face the 1963-1964 Congressional campaign without defeatism or complacency and with pride in the progress that has occurred. Finally, it is, above all, essential that our position not be undermined by the adoption of any policies that compromise our basic principles."

In considering seven so-called "pledge" resolutions, involving professional freedom, the House adopted a substitute resolution urging that all physicians be encouraged to support the position taken by the House of Delegates in June, 1961. That policy statement said: "The House of Delegates invites attention to the fact that the medical profession is the only group which can render medical care under any system and that the medical profession is best qualified to determine how the best medical care can be delivered."

"The House of Delegates believes that the medical profession will see to it that every person receives the best available medical care regardless of his ability to pay, and it further believes that the profession will render that care according to the system it believes is in the public interest and that it will not be a willing party to implementing any system which is detrimental to the public welfare."

Medical Ethics

The Judicial Council submitted a report containing new opinions on the medical ethics involved in physician ownership of drug stores, drug repackaging houses and drug companies, dispensing of glasses by ophthalmologists, and advertising practices of medical laboratories. The House decided that the questions of physician ownership of drug stores, drug repackaging houses and drug companies, and the dispensing of glasses by ophthalmologists, should not be acted upon at this time. Those opinions were returned to the

Judicial Council for further study and report. The House approved the portion of the report relating to advertising practices of medical laboratories and agreed that the propriety of such practices should be determined at the local level in compliance with the new opinion. The House also approved the rules of procedure adopted by the Judicial Council for disciplinary action in cases where the Association now has original jurisdiction as conferred by the June, 1962, change in the Bylaws.

Interns and Residents

A special report on the compensation of interns and residents, which was published in the October 27 issue of JAMA, was presented to the House by the Council on Medical Education and Hospitals and the Council on Medical Service. The report was submitted as information only, with a request for further study, comments and suggestions. The House urged that all delegates, hospital staffs and medical societies discuss the report and forward all suggestions to the two Councils in time to influence the form of the report to be presented for action at the June, 1963, meeting.

In another action on graduate medical education, the House approved a report on internships and hospital services in which the Council on Medical Education and Hospitals recommended numerous changes in the Essentials of an Approved Internship. The House declared that "their acceptance will further strengthen the educational values of the internship and advance American medicine's contribution to worthy goals of international educational exchange."

The House modified one Council recommendation to read as follows: "In order to maintain high standards of education and better assure the patients' welfare, at least 25 per cent of the total house staff (interns and residents) of a hospital should be graduates of accredited United States or Canadian medical schools. When United States and Canadian graduates represent a lesser portion of the house staff for two successive years, this will warrant that serious consideration be given to disapproving the internship."

The House instructed the Council on Medical Education and Hospitals to exert every possible effort and influence so that all hospitals with approved house officer training programs accept a reasonable number of foreign medical school graduates.

Board of Trustees

The House, by a vote of 130 to 48, adopted changes in the Constitution and Bylaws which would have implemented the June, 1962, recommendations of the Ad Hoc Committee on the Board of Trustees, including expansion of the Board from 11 to 15 members. However, the Judicial Council later informed the

House that the affirmative votes necessary to amend the Constitution should have totalled at least 144, or two-thirds of the 216 voting delegates registered at the Wednesday session. The House then adopted a motion to vote on the proposed Constitutional amendments, in accord with the changes made in the Bylaws, at the opening session of the June, 1963, meeting.

Sections and Scientific Program

A report by the Committee to Study the Scientific Sections, recommending major changes in the organizational structure and scientific program of the Association, was presented to the House by the Board of Trustees. However, because of many requests for delay in approval, the House instructed the Speaker to appoint an Ad Hoc Committee composed of members of the House, and including representatives of the sections, to study the subject and report next June.

Miscellaneous Actions

In considering a wide variety of resolutions and annual and supplementary reports, the House also:

Instructed the Board of Trustees to use every influence in their command to have the *Hill-Burton Law* amended in such a manner as to eliminate all categorical grants, eliminate the term "diagnostic and treatment centers" from any listings in the act and prevent federal funds being awarded under existing law as a grant to closed panel medical corporations to build diagnostic and treatment centers.

Declared that it is both the responsibility and duty of the AMA to submit testimony before Congress on the subject of *research appropriations* in the health field.

Urged state and county medical societies to continue promoting the aggressive, consistent development of *Blue Shield* senior citizen programs.

Encouraged medical societies and physicians to provide cooperation and leadership in the formulation and operation of regional *hospital planning* bodies.

Approved *Essentials* of Acceptable Schools for Inhalation Therapy Technicians, Cytotechnology and Medical Technology and of Approved Residencies in Pediatric Cardiology.

Recommended that a Board report and two resolutions dealing with the "*Liberty Amendment*" be re-referred to the Council on Legislative Activities for further study.

Warned against the dangerously low level of immunization for *smallpox* and urged physicians and their patients to maintain the needed protection.

Pointed out that state and county medical societies should collaborate with departments of *public health*

(Continued on page 42)



Along The BOOKSHELF

Stormont Medical Library

RECENT ACQUISITIONS

- Saunders, W. B. Medical clinics of North America. Saunders, 1962.
- Glasser, Hugo. Road to modern surgery. Dutton, 1962.
- Annual Review, Inc. Annual review of biochemistry. Annual Review, 1962.
- Harrison, T. R. Principles of internal medicine, 4th ed. McGraw-Hill, 1962.
- Rosoff, Sidney. Incorporating your medical practice. Channel Press, Inc., 1962.
- Benson, C. D. Pediatric surgery, Vol. 1 & 2. Yearbook, 1962.
- Surgical clinics of North America. Progress in gynecology and obstetrics. Saunders, 1962.
- Pediatric clinics of North America. Hematology. Saunders, 1962.
- Mayo Clinic. Collected papers in medicine. Saunders, 1962.
- Mayo Clinic. Collected papers in surgery. Saunders, 1962.

MONOGRAMS AVAILABLE IN THE LIBRARY

Gastroenterology (con't.)

- Zimmerman, Leo. Anatomy and surgery of hernia. William & Wilkins, 1953.
- Bacon, Harry. Proctology. Lippincott, 1956.
- Bacon, Harry. Atlas of operative technic: anus, rectum, and colon. Mosby, 1954.
- Cantor, Alfred. Ambulatory proctology, 2nd ed. Hoeber, 1952.
- Ross, Stuart. Synopsis of treatment of anorectal diseases. Mosby, 1959.
- Turell, Robert. Diseases of the colon and anorectum. Saunders, 1959.
- Kleckner, Martin. Cirrhosis of the liver. Thomas, 1960.

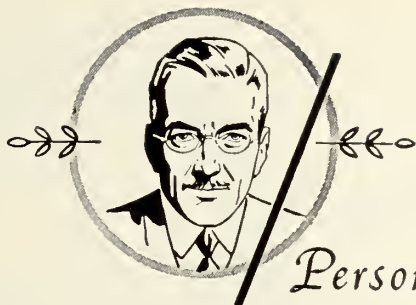
- Lichtman, Solomon. Diseases of the liver, gallbladder and bile ducts, 3rd ed. Lea & Febiger, 1953.
- Schiff, Leon. Diseases of the liver. Lippincott, 1956.

Endocrinology

- Abrahamson, E. M. Body, mind, and sugar. Holt, 1951.
- Ciba Foundation. Colloquia on endocrinology, 14 vol. Blakiston, 1952-1962.
- Hurxthal, Lewis. Clinical endocrinology. Lippincott, 1953.
- Kitay, Julian. The pineal gland. Harvard University Press, 1954.
- Paschkis, Karl. Clinical endocrinology, 2nd ed. Hoeber, 1958.
- Soffer, Louis. Diseases of the endocrine glands, 2nd ed. Lea & Febiger, 1956.
- Williams, Robert. Textbook of endocrinology, 2nd ed. Saunders, 1955.
- Hertzler, Arthur. Surgical pathology of the thyroid gland. Lippincott, 1936.
- Pitt-Rivers, Rosalind. Chemistry of thyroid diseases. Thomas, 1950.
- Seed, Lindon. Treatment of toxic goiter with radioactive iodine. Thomas, 1953.
- Williams, Clyde. Thyroid scanning. Veterans Administration, 1960.
- Ciba Foundation. Adrenergic mechanisms. Little, Brown, 1960.

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Personalities—IN KANSAS MEDICINE

J. H. A. Peck, St. Francis, was named winner of the distinguished personal service award at a meeting of the Colby Chamber of Commerce in November. The distinguished achievement awards are presented annually by two of the radio stations in that area.

R. A. Dobratz, Beloit, has been elected coroner of Mitchell County, succeeding **W. W. Weltmer** also of Beloit.

The treatment of arthritis was the subject for discussion at the fall health day program held in Topeka in early November. **John E. Crary**, **Otto Ravenholt**, and **John L. Lattimore**, all of Topeka, participated in the program.

Governor John Anderson has appointed **Guy I. Akers**, Fort Scott, coroner of Bourbon County.

J. B. Satterfield moved from Plains to Humboldt in November. He has reopened the Vestel Clinic, which was closed by the death of Dr. Charles Vestel earlier this year.

J. L. Lattimore was elected president of the Topeka Blood Bank, Inc. at the annual meeting of the board of directors held in November. Other officers elected for 1963 are **M. M. Halley**, vice president, and **Waitstill B. Nickel**, secretary.

Mary Glassen recently returned to Phillipsburg to open a new medical clinic. Dr. Glassen is familiar with the community of Phillipsburg, having practiced there until 1956. She had been living in Los Angeles during the past several years.

Among the nearly 200 persons who attended the state's first conference on aftercare of psychiatric pa-

tients held at the University of Kansas during November were: **Daniel Petersen**, Herington; **J. Luis Ibarra** and **George Zubowicz**, both of Osawatomie.

L. V. Borgendale, Junction City, has been elected chairman of the Geary County annual March of Dimes fund raising campaign to be held during January.

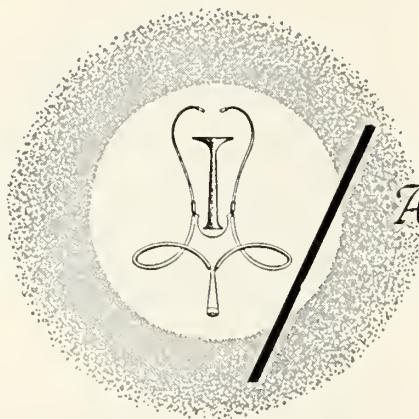
Dr. and Mrs. A. W. Bradford of Overland Park attended the 16th general assembly of the World Medical Association in New Delhi, India, in November. During their trip they visited the Far East, Middle East, and Southern Europe, and inspected many of the medical facilities there.

"The Emotional Responses to Trauma on Compensation and Liability Cases" was the subject of a seminar held in Wichita in November. **Herbert C. Modlin**, Topeka, and **Austin Adams**, Wichita, were among the principal speakers. Participants in panel discussions included **Arthur H. Bacon**, Wichita, and **John E. Morton**, Halstead.

Robert W. Friggeri, Girard, has been elected president of the newly organized Crawford County Heart Council. The meeting and election of officers was held in Pittsburg in November.

Dr. and Mrs. Karl E. Voldeng moved from Wellington to Phoenix, Arizona, in early January. They will make their home in Phoenix and Dr. Voldeng will continue in the practice of medicine there.

Ben M. Kozikowski has returned to Kansas City to establish his practice after completion of an orthopedic surgery residency at the Los Angeles County Hospital.



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the DOCTOR'S CALENDAR. Notice of the session is posted in advance to allow the physician time to make preparations.

JANUARY

Ninth quarterly postgraduate seminar on psychiatric problems for the family physician. *Homicide and Suicide, and the Medico-Legal Aspects of Psychiatry*, January 27, Neurological Hospital, Kansas City, Missouri. For more information regarding this and future seminars, contact: GP Program, Neurological Hospital, 2625 West Paseo, Kansas City 8, Missouri.

The 27th annual session of the International Medical Assembly of Southwest Texas, January 28-30. The Granada Hotel, San Antonio. Program will be a symposium concerning all aspects of cancer. Contact: Mr. S. E. Cockrell, Jr., Exec. Secretary, 202 West French Place, San Antonio.

FEBRUARY

Department of Postgraduate Medical Education, University of Kansas School of Medicine postgraduate courses:

Feb. 11-15 Medical-Surgical CLINICAL SYMPOSIA: *Endocrinology, Medical Problems in Surgical Patients, Psychiatry, Gastroenterology, Pulmonary Disease.*

Feb. 18-20 *Radiology and Radioactive Isotopes.*

Contact: The Department of Postgraduate Medical Education, University of Kansas School of Medicine, Rainbow Boulevard at 39th Street, Kansas City, Kansas.

The American College of Radiology, February 6-9, Drake Hotel, Chicago. Contact: William Stronach, Exec. Director, 20 N. Wacker Drive, Chicago.

American College of Physicians postgraduate course, *Modern Physiological Concepts of Cardiovascular Disease*, February 11-15. Presbyterian Medical Center, San Francisco. Contact: E. C. Rosenow, Jr., M.D., Exec. Director, The American College of Physicians, 4200 Pine Street, Philadelphia.

Northwest Missouri Chapter of the Missouri Acad-

emy of General Practice and the University of Kansas School of Medicine postgraduate program, *The Small Laboratory*, February 19. Contact: John P. Mabrey, M.D., Plattsburg, Missouri.

Postgraduate course, *Management of Trauma*, February 27-March 1. University of Colorado School of Medicine. Contact: The Office of Postgraduate Medical Education, University of Colorado School of Medicine, 4200 E. Ninth Avenue, Denver.

MARCH

American Industrial Health Conference, March 18-21, Washington, D.C. Contact: American Industrial Health Conference, 55 E. Washington Street, Chicago.

American College of Physicians postgraduate courses:

Mar. 4-8 *Physician Methodology in Medical Research*, Massachusetts Institute of Technology, Cambridge.

Mar. 18-23 *Recent Advances in Cardiovascular Disease*, Mount Sinai Hospital, New York City.

Contact: E. C. Rosenow, Jr., M.D., Exec. Director, 4200 Pine Street, Philadelphia.

Department of Postgraduate Medical Education, University of Kansas School of Medicine postgraduate courses:

Mar. 11-13 Pediatrics.

Mar. 18-19 Cardiac Auscultation.

Contact: The Department of Postgraduate Medical Education, University of Kansas School of Medicine, Rainbow Boulevard at 39th Street, Kansas City, Kansas.

The next examination for Certification in Occupational Medicine will be held March 16, 17, and 18, it has been announced by the American Board of Preventive Medicine. The examination has been

(Continued on page 42)



The Kansas Press Looks at Medicine

Editor's Note. In this section the JOURNAL reproduces editorials relating to medicine which have appeared in the lay press. An effort is made to include both favorable and unfavorable comments, and the Editorial Board in no instance assumes responsibility for the opinions expressed.

OTHER OPINION: JUST WHO IS ILL?

We can expect a fight in Congress next year over the Medicare plan of President Kennedy, a plan to attach medical care for the aged to Social Security like a lamprey hooks onto a trout. But at least it shapes up to a fair battle with no threats from the American Medical Association.

AMA's House of Delegates, which calls signals for the medical doctors, this week spurned some resolutions which would have called for a boycott of Medicare—if it becomes law.

Up in Canada this year, the doctors in one province tried the strike tactic. It may work in their favor, but it won't enhance the doctor image in the eyes of his patients.

The patient concepts of his family doctor, with a white jacket and a stethoscope, standing in the office door, or sitting on the bedside of a sick one—they just don't go with a dogmatic position. My doctor isn't a "my way or I don't play" type.

On his side, the doctor has much to offer in his argument to leave healing to its successful ways. Unfettered medicine has taken life expectancy to an average of 70 years. It has produced men of compassion who in their practice annually forgive many bills that patients in ill luck or circumstance cannot pay. The profession has encouraged private insurance programs to cushion the shock of surgery or prolonged illness.

It's not the doctor who is ailing, anyway. The big fever is the federal government, caused by that soaring deficit in Washington. And the wrong way to bring it down is to add another bureaucratic program.—*New Ulm (Minn.) Journal—Atchison Daily Globe*, December 6, 1961.

SAD WASTE OF HUMAN RESOURCE

The *Independence Daily Reporter* discusses one of the continuing problems of the modern world:

"Compulsory retirement is one of the peculiar inconsistencies of our time. Knowledge about the aged has greatly increased in recent years. We know many men at age 65 and well beyond are still capable of sustained, exacting work. Yet forced retirement at about that age is now the rule rather than the exception.

"The foolishness of this is attested both by common experience and careful scientific study. Almost everybody can cite one or several cases of men who were in good health and spirits until they were forced to retire. They then soon developed various infirming ailments. It has become common to hear someone say of a man, 'he was just fine until he retired, but then . . .'

"The popular notion there is a direct relationship between retirement and ill health has also gained strong new support in a report by an American Medical Association committee which for the past seven years has studied the problems that come with aging. 'Compulsory retirement,' the committee notes, 'is a waste of human resources that this nation can ill afford. It contributes measurably to ill health resulting from lack of work, exercise and responsibility.'

"This conclusion is not new. It merely reinforces the judgment close observers have been upholding in recent years. Hopefully, tho, this report by an AMA committee may get industry and organized labor and government off dead center in the important matter of junking the old ideas about retirement at 65 and starting afresh. The well-being of individuals affected is the most important factor involved. But the nation's economic and social vigor also are involved.

Reform of our outmoded retirement system would be much in the public interest."—*Dodge City Daily Globe*, December 3, 1962.

AMA Clinical Meeting

(Continued from page 37)

in the interest of community health, always keeping in mind the need for a proper balance between local public health programs and the private practice of medicine.

Authorized the Board of Trustees to investigate the feasibility of establishing a *physicians' pension plan* and to present a plan for the implementation of such a program to the House in June.

Instructed the Board of Trustees to study the feasibility of *regional clinical sessions*, taking into consideration the already established regional meetings of medical specialty groups and the Academy of General Practice.

Commended the Council on National Security and its Committee on *Disaster Medical Care* for initiating a visitation program with committees on emergency medical service of state medical societies.

Expressed appreciation and thanks to the *Woman's Auxiliary* for their impressive accomplishments in behalf of our free society.

Opening Session

The delegates learned from a report by the American Medical Association Education and Research Foundation that one out of every ten medical students in the U. S. is now benefiting from the new student loan program. Since its inception nine months ago, the program has granted loans totaling more than nine million dollars to 3,042 medical students and 1,787 interns and residents, with applications being received at a rate of 150 per week. It also was announced that Merck Sharp & Dohme pharmaceutical company is making a second matching grant of \$100,000 in support of the loan fund. The AMA-ERF also received contributions totaling \$440,583 from physicians in five states for financial aid to medical schools.

GEORGE F. GSELL, M.D.
LUCIEN R. PYLE, M.D.
Delegates from Kansas

ADVERTISING

All advertising contracts, and all copy from advertisers under contract are subject to approval of the editorial board. Copy should be received by the 15th of the month immediately preceding the month of publication.

Announcements

(Continued from page 40)

scheduled at the Sheraton-Park Hotel in Washington, D. C., preceding the annual meeting of the Industrial Medical Association which will be held at the same hotel March 18-21. Applications for certification should be sent to Tom F. Whayne, M.D., Secretary-Treasurer, American Board of Preventive Medicine, 4219 Chester Ave., Philadelphia.

The Department of Otolaryngology, University of Illinois School of Medicine postgraduate course, *Laryngology and Bronchoesophagology*, March 18-30. Contact: The Department of Otolaryngology, University of Illinois School of Medicine, 1853 W. Polk, Chicago.

The American Cancer Society, Kansas Division, Annual Midwest Cancer Conference, March 29-30. Contact: American Cancer Society Kansas Division, Inc., 824 Tyler, Topeka.

American College of Allergists Graduate Instructional Course and 19th Annual Congress, March 24-29, Americana of New York, New York City. Contact: John D. Gillaspie, M.D., Treasurer, 2141 Fourteenth Street, Boulder.

Fourth Oklahoma colloquy on advances in medicine, *Pulmonary Insufficiency*, March 28-30. University of Oklahoma Medical Center auditorium. Presented by the University of Oklahoma School of Medicine in cooperation with the Oklahoma Tuberculosis Association and the Oklahoma Thoracic Society. Address inquiries to: Robert Byrd, M.D., University of Oklahoma School of Medicine, Oklahoma City.

COLOR SLIDES AVAILABLE

Available now on a free loan basis from the Kansas Heart Association is a set of 36 2" x 2" color slides on "Eye Grounds in Hypertension." A booklet of 30 pages of correlated script accompanies the set of slides.

The topics included in this unit are as follows:

1. The normal eye ground and its variations.
2. The vascular changes in benign hypertension.
3. The retinopathy of accelerated hypertension.
4. The hemorrhagic and exudative changes with and without hypertension.
5. Papilledema.

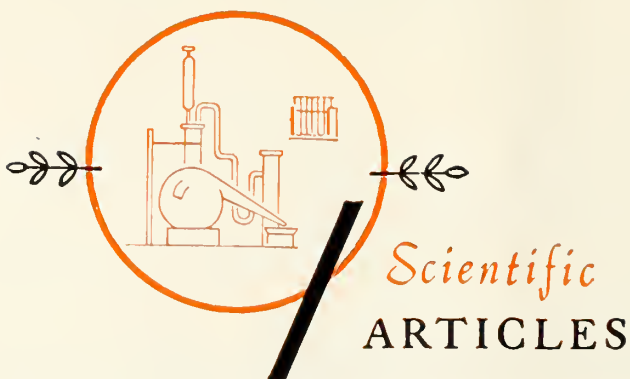
Should you like to borrow this set of slides for your county medical society or hospital staff meeting, write the Kansas Heart Association, 633 Kansas Avenue, Topeka, Kansas. They ask for these to be returned promptly after showing.

Special Geriatric Issue

The Editorial Board is pleased to present this issue of the JOURNAL devoted to geriatric-related subjects, which should be of interest to members of the Society.

This material has been prepared at the request of the Gerontology Committee of the Kansas Medical Society, and we are proud to present the result of their efforts.

We are especially grateful to Dr. Delbert V. Preheim, chairman of the committee, for his help in soliciting the papers published here.



Long-Term Care

The Physician's Responsibility to Nursing and Adult Care Homes

DELBERT V. PREHEIM, M.D., *Newton*

IN A SOCIETY where activity, achievement, and production are emphasized, youth is logically idealized. Because the emphasis on youth and productivity is desirable, it somehow becomes equated with "good." By inference, declining production and aging are undesirable and somehow become "bad." Under these circumstances it seems necessary not to feel, look, or even admit to being old. This denial extends to dying and death. Increasingly, death is referred to as "passing on" or "passing away" as if to soften its harshness. The corpse is even denied the dignity of looking dead but is made to "look natural." Thus, we find our older patients and ourselves beset with such oddities as "future need plans" which transform cemeteries into memorial gardens!

These "elder-discarding values" are easily seen and it is not difficult to delineate some of the situational factors which engender them. The ever increasing mobility of the American family is well known (one family in five moves every year). There is no room for the aged or chronically ill relative in the modern two-bedroom utility home. Employment of both the man and wife in a family makes the care of the aged member (especially if he becomes chronically ill) difficult or even impossible. We all see the devastating effects of compulsory retirement at age

65 on the physical and emotional health of people who have no hobbies nor interests beyond their work.

There are strong forces which assure solution of the financial problems of the aged and aging, usually by dependence upon government with its taxing function. If one reflects on the fact that the medical

The physician's responsibility extends beyond the mere admission of a patient to a nursing home. The author tells us how we can improve the care of our elderly patients.

indigency of many of these people is due to their impoverishment by the inflationary fiscal policies of the federal government, this type of solution is not without logic. The estimated sixteen million Americans aged 65 or more are already a potent political force and their effective organization is imminent. Three-fifths of this group is estimated to be chronically ill. The Kansas Medical Society, together with other state societies is helping implementation of the provision of health insurance for this group of citizens. Many Adult Care Homes have been constructed in

Kansas and elsewhere in this country in the last two decades. Communities such as Hopedale, Illinois, have constructed their own facilities through their own resources. The widely quoted Solen and Baney report in 1945 indicated that there were 25,000 nursing care homes in the country that were caring for 450,000 people. In 1960, it was estimated that an additional 323,000 beds were urgently required.¹

Leadership in the establishment of standards of care (and soon for accreditation) and for effecting the up-grading of this care must come from the medical profession. In Kansas, the introduction of the new *Standards, Rules and Regulations for Adult Care Homes*² provides the profession with a new opportunity to exercise such leadership. When the nursing home is a medical facility (as it logically should be), the relationships which exist between the physician and the home are crucial. Often there are signs that these relationships leave much to be desired, as reported in a recent study from Illinois.³ A survey of nursing home personnel by questionnaire revealed major complaints concerning their relationships with physicians, the most frequent were:

Physicians do not adequately teach nurses.

They do not complete and sign charts of discharged patients.

They do not properly prepare patients for admission to the home.

They are unfamiliar with *Minimum Illinois Standards*.

They do not understand the patient's needs.

They do not make proper referrals to dentist, psychiatrist, speech therapist, minister, etc.

They do not make yearly physical examinations.

They do not impress the family and others of the patient's needs.

They do not understand the homes' problems.

The first essential of a good nursing home is to provide a happy environment, attention to individual needs, and personal courtesy.¹ It is my conviction that the physician must expect these attributes from the nursing home. He must set the tone for them much as the father does in his role as head of the household in his home. This leadership must extend beyond the patient to the nursing home personnel as does that of the responsible father beyond his children to the wife and mother in the home. This responsibility is recognized in the new *Standards, Rules and Regulations*.

"Continuity of care is a key concept in any program of total care of the aged (or chronically ill)."⁴ On leaving the hospital the patient must have restorative measures continued for him by an extension program tailored to fit his needs. "Since the physician considers the nursing home in much the same category as the private home"¹ (rather than as a hospital or other specialized unit), his attitude towards the

home often does not engender a helpful self-concept for the home personnel. Under these circumstances, up-grading of adult care homes in any area becomes difficult. It is not possible to legislate nor to provide friendly open relationships among physician-patient-home personnel by state agency fiat.

Every Kansas physician owes to himself, to the profession, and to his elderly and chronically ill patient to:

1. Familiarize himself with the provisions of the recently introduced *Standards, Rules and Regulations for Adult Care Homes in Kansas*.

2. Gain the best possible understanding of the problems, needs, and assets of each individual patient and of each nursing home with which he comes in contact.

3. Add what he can to the upgrading of nursing home care in KANSAS, hoping that they indeed can be worthy "homes" and not "hospitals."

4. Sharing of his specialized knowledge and insights with nurses and other para-medical people in this field.

5. Insist upon clear arrangements with every patient or his family so that he can assume medical responsibility consistent with good care.

6. If he cannot generate an interest in and zest for the care of the aged and chronically ill, he should do them a kindness by referring them to someone who can and will.

References

1. Private Nursing Homes: 298th Public Affairs Series Booklet, Public Affairs Committee, 22 E. 38th St., New York.

2. Standards, Rules and Regulations for Adult Care Homes in Kansas: Division of Health of the Aging, Kansas State Board of Health.

3. Medical Care in Illinois Nursing Homes: Charles H. Kramer, M.D., and John C. Lessing, Journal American Geriatric Society, 10:983, 1962.

4. Integration of the General Hospital and the Nursing Home in the Total Care of the Aged and Infirm: M. L. Ricitelli, M.D., and James M. Rosen, M.D., Journal American Geriatric Society, 9:611, 1961.

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Care of Aged

The Adult Care Home Program in Kansas

NORMAN W. ANDERSON, M.D.,* *Topeka*

THE RAPID ADVANCES in medical science during this century have resulted in an increasing life span for the individual and have created profound medical, social and economic problems.

There is a relative decline in acute illnesses accompanied by a vast increase in chronic illnesses of long duration and a high rate of disability. A progressively large proportion of the nation's total demand for medical services is related to the growing problem areas of chronic diseases in the aged since this group uses medical care facilities two and one-half times more often than the average population.

The time has come for progressive communities to survey the need for various types of care facilities in order to provide medical care of high quality, at reasonable costs, to our senior citizens. Such individuals should be placed in the care facilities commensurate with their needs. The concept that Adult Care Homes are an integral part of the medical care facilities of any community must become an accepted fact.

The hospital can assume the role of leadership in community medical care. Close working relationships can be established between a hospital and Adult Care Homes in which the hospital can offer consultative services in the areas of nursing care, rehabilitation, dietetics and in such fields as food purchasing, preventive maintenance, and budgeting. These services should be provided on a contractual basis between a hospital and the Adult Care Home.

On December 10, 1962, a copy of the new *Standards, Rules and Regulations for Adult Care Homes in Kansas* was mailed to each physician in Kansas. Accompanying this publication was a letter from the Gerontology Committee of the Kansas Medical Society endorsing the new standards and calling the attention of the membership to the change in admission policies, the use of a Home Care Referral form for patient placement, and standards of nursing care in Adult Care Homes. Homes are now categorized into Boarding Homes, Personal Care Homes, and Skilled Nursing Homes; and the type of license issued is based upon the quality of nursing care that a particular home is able to provide.

An increasing number of older individuals are being admitted to Adult Care Homes after a recent stroke, a recent fractured hip, for postoperative convalescence, with cancer, heart disease, diabetes, incontinence, etc. As of January 1, 1963, there were

The new *Standards, Rules and Regulations for Adult Care Homes in Kansas* represents an important step toward improving the quality of care offered by the Adult Care Homes in Kansas.

The licensed Skilled Nursing Home fills an important need in the care of those patients who require skilled nursing and rehabilitation.

The employment of increasing numbers of registered professional nurses and licensed practical nurses by administrators of Adult Care Homes has resulted in improved patient care and increased physician interest in the Adult Care Home Program.

Basic to improvement of the program is adequate remuneration to the Adult Care Home administrator commensurate with the type of care required and given to a patient.

758 stroke patients, 475 with fractured hips, 285 diabetics and 2,405 individuals incontinent of urine or feces. Such persons require not only high quality nursing care supervised by a registered professional nurse but care by a nursing staff trained in rehabilitative procedures. A home licensed as a Skilled Nursing Home is able to provide this type of required care.

Skilled Nursing Home licensure requirements are as follows:

1. An Advisory Committee consisting of not less than a physician, a nurse, and a religious advisor.
2. The nursing care under the immediate supervision of a registered professional nurse.
3. A staff member trained in the techniques of self-help and physical rehabilitation.
4. A written nursing care plan for each patient de-

* Director, Area of Medical Health Services, and Division of Health of the Aging, Kansas State Board of Health.

veloped and coordinated with physician's orders for medication, treatment, diets and activities.

5. An in-service educational program for nursing service personnel held regularly at a definite time and place and attended by all members of the staff not required for the immediate care of a patient.

As of January 1, 1963, there were 453 licensed Adult Care Homes providing 10,745 beds. Eighty-nine counties have licensed homes which vary from one home per county to 67 homes per county. The size of homes is as follows:

<i>Number of Homes</i>	<i>Bed Capacity</i>
1	300 or over
4	100-150
42	50-99
99	25-49
194	10-24
113	less than 10

During the period July 1, 1961, to December 31, 1962, there was a rapid increase in new construction and additions to or remodeling of existing homes to increase bed capacity and improve structural arrangement. Sixty-six plans for construction of new homes were approved. These homes averaged 40 beds and cost from \$125,000 and up per home. To date 23 new homes have been completed, nine are presently under construction, 29 still in the planning stages, and five withdrew their plans. New construction, when completed, will add 3,723 beds. Forty-one licensed homes added new additions or remodeled existing facilities with an increase of 589 beds.

The Kansas State Board of Health assumed the responsibility for the program, standards, and licensure of Adult Care Homes in Kansas on July 1, 1961.

Programs for Improvement of Patient Care

1. Project: "Improvement of Nursing Care in Adult Care Homes in Kansas."

A study performed by the Kansas State Board of Health in 1959, of 100 Adult Care Homes showed the increasing change in the complexion of residents in our homes. The great majority of the patients were suffering from chronic disease and disability and were in need of skilled nursing care. It was apparent that there was a great need for improvement in nursing care and rehabilitative procedures if the total needs of the patient were to be met. It was felt that the answer lay in demonstrating to Adult Care Home administrators the need for supervision of nursing care in the Adult Care Home by a professionally trained registered nurse.

The purpose of the project was to determine if professional nurses on a short time basis, through conferences with nursing home administrators, guid-

ance, demonstration, and teaching of nursing personnel could bring about improvement in unit environment and patient care.

During the past two years ten nurses have worked in Adult Care Homes throughout Kansas on request of the administrators. Special efforts were made by District and County Public Health Nurses to interest the administrators, where there was the greatest need for improvement of patient care, in the project. Within a short period of time the request for the services of these dedicated project nurses far exceeded our expectations.

On April 1, 1961, there were 45 registered professional nurses and 17 licensed practical nurses employed in Adult Care Homes.

On November 1, 1962, there were 220 registered professional nurses and 140 licensed practical nurses employed in Adult Care Homes.

Much of this increase can be attributed to the above project, but in all fairness one must consider the requirements for Skilled Nursing Home licensure as also being a factor.

There are approximately 8,834 registered professional nurses in Kansas of whom 2,937 are inactive. The inactive nurses are generally those with small children. Supervision of the nursing care in Adult Care Homes does not require a continuous eight-hour shift assignment, and it is for this reason that many of this category of nurses have entered the employment of Adult Care Homes where their hours of employment can be adjusted to family requirements.

2. Courses in Self-Help and Rehabilitation.

It became very evident early in our program that efforts should be made for the early rehabilitation of the acute stroke patient. Far too many individuals were found lying in bed in the so-called "fetal position" with contracture and atrophy when early effective exercises could have restored at least 80 per cent of such individuals to a state where they would be able to ambulate, feed and clothe themselves, and take care of their personal needs. Rehabilitation programs were also needed for the fractured hip and arthritic patient. The supply of trained physical therapists was certainly insufficient to meet these great needs.

During 1961, and 1962, one-week practical courses in self-help and rehabilitation have been conducted for nursing home staff personnel. Each course includes the philosophy of rehabilitation, exercises for the stroke patient, transfer of a patient from a bed to a wheel chair, crutch walking, use of devices for the handicapped, bowel and bladder training, etc. Courses were limited to ten individuals, and one class was held each month except during the summer months. As of January 1, 1963, 112 individuals employed in Adult Care Homes have completed this

course. Another 50 individuals will have completed this course by June 30, 1963. The courses are conducted by well qualified hospital staff personnel. Courses have been offered at the Hadley Memorial Hospital and Rehabilitation Center, Hays, Kansas, since 1961. Courses were held at the University of Kansas Medical Center during 1961, but their workload prevented their participation in this program during 1962.

A follow-up study is now being conducted to evaluate the effectiveness of this program and will be reported upon at a later date. There is, however, ample evidence to show that many stroke patients cared for in Adult Care Homes under supervision of their physician, are now being rehabilitated to usefulness by those who have attended these courses. In several instances they have left the Adult Care Home and returned to their former jobs.

3. *Courses in Nursing Rehabilitation.*

Since 1961, a one-week course in rehabilitation for registered professional nurses has been conducted at the University of Kansas Medical Center. These courses have been attended by nurses employed in Adult Care Homes and by District and County Public Health Nurses who supervise our Adult Care Home program at the local level. Seventy-two nurses have attended these courses during the past two years. Another course will be conducted in June of 1963. A few nurses employed in hospitals have also attended with the understanding that they would offer their services in rehabilitation to Adult Care Homes on a need basis.

4. *Circuit Courses in Chronic Diseases.*

There is a lack of knowledge of the basic facts concerning chronic diseases by personnel who care for patients in our Adult Care Homes. Four circuit courses of four hours each were conducted in 19 different cities in Kansas during 1962. The programs were presented by the Department of Nursing Education, University of Kansas Medical Center. Eight hundred and sixteen individuals employed in our Adult Care Homes participated and 75 per cent of participants attended all sessions. Local physicians gave their support and participated in these programs. Emphasis during 1962 was placed on the nursing requirements of the cardiac, diabetic, stroke, and cancer patient. Plans are being made to repeat this course in the spring of 1963.

5. *Monthly Report of Residents and Employees; Resident and Adult Care Home Employees Questionnaire.*

When the Kansas State Board of Health assumed the responsibility for the program, standards, and licensure of Adult Care Homes in Kansas, very little information was available concerning the nursing needs of patients in our Adult Care Homes except that contained in initial or annual evaluation of the

homes for licensure and reports of periodic visits. The same was true concerning the qualifications of staff employed in the homes.

It is essential for good program planning that a continuing system of accounting for the medical needs of all patients as well as pertinent data on competency of the staff be developed and maintained. The above report and questionnaires were developed and are patterned after the PAS (Professional Activity Study) conducted by hospitals. The monthly report is submitted by each Adult Care Home administrator along with a detailed informative questionnaire on each new patient admitted and each employee hired. This data is placed on IBM cards. A significant amount of valuable information is being accumulated and will be published in the near future. The care in reporting the facts and detailed information by the administrators of Adult Care Homes is most commendable. To date we have detailed information on over 11,000 patients in Adult Care Homes in Kansas. The format of these questionnaires can be found in the *Standards, Rules and Regulations for Adult Care Homes in Kansas*.

Illustrative of some of the factual information obtained are the following:

a. Extracted from the Monthly Report of Residents and Employees for the month of October 1962.

Number of new patients admitted	473
Number of patients discharged	206
Number of patients admitted to hospitals	175
Number of deaths	187
Number of new employees	245
Number of employees terminated	185

Note: Under each of the above there was recorded detailed information, e.g., reason for hospital admission, cause of death, reason for employment termination, etc.

b. Extracted from 11,078 patient questionnaires.

Average age of patients was 84.4 years.

Twenty-six patients were over 100 years of age.

6.8 per cent are stroke patients.

4.3 per cent are fractured hip patients.

2.6 per cent are diabetic patients.

62.1 per cent of all patients were edentulous, 52 per cent wore dentures.

21.7 per cent are incontinent of urine but only 2.3 per cent had catheters.

51.7 per cent of all patients were on Social Welfare (OAA).

Private patient payments for care averaged \$151.37 per month.

Welfare patient payments for care averaged \$120.17 per month.

6. *Improved Nutrition and Food Service in Adult Care Homes.*

Health problems of the aging are often the result of years of poor eating habits. Most of the patients have chronic diseases which require special dietary

treatment. Many individuals responsible for the food served in Adult Care Homes do not have the knowledge of nutrition, menu planning, therapeutic diets, food buying, food sanitation, food preparation or service which they need to serve the kind of food which will meet the needs of the patients.

A survey of approximately 200 Adult Care Homes revealed the following facts:

- 72 per cent of the homes had patients for whom modified diets were prescribed.
- 63 per cent of the homes were feeding diabetics.
- 30 per cent of the homes had residents on low-fat diets.
- 52 per cent of the homes had residents on low-salt diets.
- 30 per cent of the homes had residents on other modified diets.

Three qualified dieticians were employed as consultants in widely scattered areas of the state this year. They are conducting educational courses on diet preparation, menu planning, food purchasing and the like. They are available to Adult Care Home administrators, on request, for instruction in the preparation of special diets for patients. Prior to the formal instruction, the consultants visited the Adult Care Homes within their areas of responsibility to determine the dietary problems and requirements.

There has been a great need and desire for knowledge about nutrition among the Adult Care Home staff personnel.

7. *Annual Institute of Adult Care Home Administrators.*

One of the requirements for renewal of licensure each year is attendance of administrators at the annual institute or an approved educational program. These institutes are conducted by the Licensing Agency in six different areas of Kansas. Emphasis during the 1962 institute was placed on nursing care. A lecture on "Medical Records—The Why and Wherefore" was followed by a one-half day workshop on medical records. Small workshop groups were supervised by staff, district and county public health nurses. A workshop booklet was used which

included typical patient cases, forms to be used, and an approved solution. Much emphasis was placed on care of the bedfast patient with incontinence and bowel and bladder training. Well qualified physicians within each area participated in this phase of the program. The remainder of the program consisted of instruction in writing "Job Descriptions" for staff personnel and a discussion of the new proposed *Standards, Rules and Regulations for Adult Care Homes in Kansas*. Over six hundred individuals attended the one and one-half day institutes.

8. *Instruction: "How to Be a Nurse's Aide in a Nursing Home."*

The State Department of Vocational Education has held 27 classes in 20 separate cities for Adult Care Home employees since July 1, 1961. Total attendance of nurse's aides at the above classes was 322.

9. *State Hospital Workshops for Nursing Home Administrators and Staff.*

There are approximately 1,200 patients in our Adult Care Homes who were formerly patients in our state mental hospitals. The state mental hospitals at Larned, Osawatimie, Topeka and Winfield conduct workshops of one-week duration each to teach Adult Care Home staff personnel something about the care of these former mental hospital patients. In addition instruction is given in the field of dietetics, medications, occupational therapy, volunteer services and remotivation of patients. Since July 1, 1961, 18 workshops have been held with a total attendance of 147.

10. *Volunteer Program.*

The Division of Services for the Aging, Department of Social Welfare, has trained 180 persons to do friendly visiting, social and recreational programs in the Adult Care Homes during the year 1962.

Prior to participation in this program it is essential for the volunteer to have an understanding of the problems, attitudes, and needs of patients in the Adult Care Homes.

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Incontinence

Management of Incontinence in the Geriatric Patient

D. CRAMER REED, M.D., *Wichita*

INADEQUATE BLADDER and bowel control are clinical problems that have been a challenge to the medical profession since the earliest times. The problem of incontinence becomes even more complex in the elderly and is of a serious concern in most nursing homes. Failure to control urine and fecal excretion, with resultant soiling of bedding and clothing, lessens any remnant of personal pride these patients have retained, as well as antagonizing all concerned with their care. The offensive odor emanating from such an environment probably constitutes the most commonly expressed sociologic criticism of such institutions.

The magnitude of the problem in terms of money is difficult to express with accuracy, though it is known that the economic burden of laundering large volumes of soiled linens and providing personnel for the bed care and treatment of the complications of persistent incontinence is a heavy one.

More precise information regarding its frequency is available as a result of a recent survey of 3,284 patients discharged from care homes in Washington State over a two year period. This revealed that 36.6 per cent had complete urinary incontinence and 33.3 per cent total bowel incontinence. However, if patients with frequent or occasional incontinence were included, the figure jumped to 69.4 per cent. There is little doubt that this condition has a similar rate of occurrence in Kansas.

While the incontinent geriatric patient is often a medical dilemma, the situation can be much improved with a better understanding of the etiology of its causes plus the cooperative participation of the attending physician.

There are three basic requirements in establishing a program of bladder and bowel training: engaging the interest and participation of both the patient and the staff, assessment of the nature of the individual problem, adopting of an appropriate and effective program.

Engaging Patient Interest

Many patients resign themselves to incontinence because they have been given no reason not to do so. This attitude frequently is the result of nursing personnel's acceptance of incontinence as a normal aspect of their duty. Thus the patient makes little or

no effort to respond to natural stimuli and advances further along a course of self depreciation. In no area is the expression "we care" of greater significance.

After procurement of staff participation, patient motivation frequently is less difficult because of the

Urinary and rectal incontinence frequently have a common causal basis. The manner of recognition of the various causes and suggestions for management based on physiologic principles has been discussed.

It should be apparent from the discussion that there is no "Royal Road" to success in the management of the incontinent geriatric patient. However, the rewards in terms of gratitude of the patient, his family and the nursing staff more than compensate for the extra time and perseverance necessary in overcoming this most perplexing problem.

enthusiasm engendered by those engaged in his care. Much can often be gained in actively soliciting cooperation of even the most lethargic or "out of touch" patient if he can experience the slightest bit of accomplishment.

Assessment of Problem

One approach to the problem would be to group the various forms of incontinence into etiologic categories. The usual textbook classification of incontinence consisting of two large groups differentiated by retention (false) and no retention (true) is perhaps not too helpful in the management of the nursing home patient.

A more useful training plan divides incontinence into four groups: cerebral clouding, urinary tract infection, destructive lesions of the central nervous system, those associated with local anatomic or tissue changes. By instructing nursing home personnel in the recognition of the various forms of incontinence and assisting with their management, the medical advisor can make a significant contribution.

Satisfactory management of incontinence is contingent on the availability of essential information. Facts concerning the patient's former bowel and voiding habits, onset of incontinence, etc. can usually be obtained from family members, the family physician, the hospital records or the social worker assigned to the patient. The physician's diagnosis of any organic illness and its effect on bowel and bladder control must also be known.

Prior to initiating any re-training plan, it is useful to analyze the pattern of incontinence. A 24 to 48 hour chart showing the periods of continence, the volume and frequency of voidings when wet or soiled, the amount and character of urine or feces all help in identifying a pattern. No training plan should be initiated by nursing home personnel without previously obtaining approval from the appropriate physician.

With the approval and aid of the physician, attendants can readily be trained to perform rectal palpation for the presence of fecal impaction and abdominal examination for evidence of vesicle distention. Obviously, for either of these examinations to be meaningful, some knowledge of the anatomy of the bladder and colon is essential.

Training Program

Each patient's program of re-training must be individualized and predicated on the information derived from the problem assessment.

If it is possible to effect early improvement (even though it may not be permanent) in the patient's incontinence, his continued cooperation is usually assured. Thus, since the converse is true, there is no logical reason to employ "shot gun" therapy even on a trial basis.

Cerebral clouding is the most frequently encountered cause of incontinence and, fortunately, is most amenable to re-training. In these cases there usually are no organic urologic problems. The loss of bowel or bladder control is often the result of impairment of the sensorium secondary to cerebral arteriosclerosis. These individuals simply do not respond adequately to the usual stimuli and frequently can be benefited by small doses of ephedrine or other central nervous stimulants of the amphetamine, methamphetamine hydrochloride group. Obviously such medications can be employed only with the approval of the physician familiar with the patient as several medical conditions contraindicate their use.

Because all nursing home patients are initially in an unfamiliar environment, they are not certain what is expected of them in the way of routine activities. It is in this area that much can be accomplished by setting up a schedule (subject to appropriate adjustment) for the patient's previously determined pat-

tern of elimination. It is important for the patient to understand that occasional accidents are to be expected early in the training period, that he and the staff must accept them as part of the learning process.

The practice of employing diapers, or referral to incontinence pads as "diapers," is to be condemned as they seemingly encourage incontinence—at least in this group of patients. The simple removal of such devices is psychologically sound, and frequently is sufficient to elicit a complete change in the patient's attitude.

Fecal incontinence, when not due to impaction, usually does not respond as readily to re-training, although regularity of toilet habits and employment of glycerine suppositories are helpful. When bowel continence cannot be obtained with re-training, induction of complete constipation is practical and is relieved by giving a cleansing soap suds enema at the same hour every second day. This procedure permits the rectum and anal sphincters to become habituated to regularity and prevents soiling and prolonged contact of fecal material with the skin. This deliberate constipation can be induced by such agents as sulfathalidine in amounts large enough to assure no bowel movement without an enema. Such therapy can be maintained over long periods of time with relative safety.

Increased physical activity within appropriate limits is also important as a means of improving muscle tone. Ambulation in progressive increments to the point of maximum tolerance is valuable also as a morale "booster." It provides an opportunity for the patient to do for himself, thus encouraging independence in other activities, increasing muscle strength, and, of equal importance, improving self esteem.

Urinary tract infection constitutes the second major cause of urinary incontinence in the elderly. The sources of pyuria are legion, though in the male patient obstructive prostatism probably is the most frequent offender. Initiation of proper drainage either through surgical intervention or catheter insertion is the only practical means of correcting this type of incontinence which is often of the overflow type.

In other cases the simple expedient of improving the fluid intake is sufficient to restore control. In the event this does not remedy the situation within a short period or if the urine obviously has a foul odor, the assistance of the attending physician is indicated, and medication to combat the infection is probably necessary.

It is with such patients that the well-trained observant attendant can often be of special value by examining the abdomen to detect a distended bladder often in advance of the onset of pyuria. He can also assist the patient with weak muscles to empty the

bladder by applying firm pressure over the suprapubic region. Such personnel should be familiar with the principles involved and technique of "clock" and "double" voiding which tend to eliminate residual urine thus reducing the probability of pyuria.

Obviously the suggestions contained in the previous section concerning cerebral clouding may be pertinent for this and other groups to be subsequently described. The value of ambulation where possible is indisputable.

The third category of geriatric incontinence includes those produced by organic lesions of the central nervous system. Typical examples of this group are paraplegia, frontal lobe cerebral tumors, multiple sclerosis, spinal cord lesions affecting the vesicle reflex arc, Parkinson's Disease, etc. Admittedly, much less can be accomplished with these patients than for those falling in either of the two previously discussed groups. However, this does not justify an attitude of defeatism. Some of these patients with neurogenic bladders can be relieved of their unpleasant symptoms on an individual basis. It is in this group of patients that employment of the Foley indwelling catheter may be indicated and necessary. In this event a rigid catheter discipline is required of all those responsible for the patient's care. The importance of employing aseptic technique in catheter care is worthy of emphasis. It should be emphasized that the critical point for contamination is at the catheter-drainage tube junction. Catheter irrigations should be performed only at the request of the attending physician and aseptic technique rigidly followed. The practice of clamping catheters for prolonged periods is strongly discouraged in most instances. Encrustations forming within the catheter or bladder are troublesome but can be suppressed or eliminated. This can be accomplished by maintaining an acid urine with dietary assistance or by administration of ammonium chloride or mandelic acid, providing there is no significant impairment of renal function. Various sterile commercial solutions employing the principle of buffered citric acid are available for catheter irrigation and can be quite helpful in preventing lime deposits in appropriate cases.

When a catheter is removed from a patient with a neurogenic bladder, some success has been reported with the intradermal injection of procaine over the vesical area. The proponents of this technique believe that its effectiveness is due to stimulation of the peripheral nerve alarm system and strengthens the voiding response initiated through the vesicle reflex arc. Smigel and Russell have reported establishment of bladder control in 25 per cent of neurologically incontinent patients with this method.

Male patients with so-called "true" incontinence do not require an indwelling catheter but need some

device to prevent soilage and resultant skin maceration. The well known "Texas Special" of World War II days has largely been replaced by more refined products such as the McGuire urinal or the plastic uro-sheath. These devices are primarily for the ambulatory patient but can usually be adapted to the bedridden patient also.

Unfortunately, there is no medically acceptable item of a similar nature available for the female patient with a neurogenic bladder and incontinence. Those suffering from multiple sclerosis or Parkinson's Disease may well be benefited by the judicious use of anticholinergic or cholinergic drugs depending on the physiologic phase of the bladder. To deal with the bladder in these two conditions it is important to understand the basic physiologic changes. The bladder in multiple sclerosis may become extremely irritable so that the slightest increase in intra-abdominal pressure may be sufficient to induce detrusor contraction which is interpreted as a sensation of urgency to the patient. In addition, the detrusor may become uncoordinated and portions of the bladder may contract and become pinched off. In Parkinson's Disease the urinary symptoms consist of hesitation, slowness and weakness of the urinary stream and dribbling which may be of such magnitude as to constitute incontinence. Parkinsonism does not affect the bladder directly but it does affect the muscles of the voluntary mechanism which become rigid, making it difficult to initiate detrusor contraction.

The final group has to do with local anatomic or tissue changes producing sclerosis and scarring of the urethra or bladder with resultant loss of vesical capacity and impaired sphincteric activity. Such conditions are: carcinoma of cervix with postradiation sclerosis or extension along the urethra and about the urethro-vesical junction, old perineal "straddle" injuries and unsuccessful vaginoplastic procedures terminating in structural distortion of the urethra. Little can be accomplished in rehabilitating these individuals thru re-training. Considerable good can be accomplished, however, in handling the fecal and urinary incontinence associated with these patients.

The principle involved in the care of these individuals is the prevention of excreta remaining in contact with the patient's skin. To prevent maceration and eventual decubitus formation, cleanliness and dryness are absolute musts. In this connection an old and oftentimes neglected method of using soap and water is excellent. This can be followed by the application of a non-alcoholic, antiseptic lotion such as Derma-fresh or other similar fatty antiseptic skin conditioner. Bed linen, when soiled, should be changed at once, but this is a difficult chore. A temporary substitution for this has been suggested by Smigel and Russell consisting of dusting and rubbing Dia-

parene® (Breon Laboratories, Inc.) powder into the texture of the draw sheet; thus helping delay decomposition of urine by ammonia-producing bacteria. Deliberate constipation can be accomplished by the technique previously described and will eliminate the problem of "fecal smearing." Where not contraindicated because of azotemia, administration of a high protein diet, mineral salts and vitamin C are particularly desirable for the bed-confined patient with incontinence.

For the patient who is incontinent of feces and urine, a device known as the Ferguson or Dryco pant will prevent soilage of clothing or bed. These are available thru many surgical supply companies or from The Ferguson Manufacturing Company of Grand Rapids, Michigan. The application of vaseline to affected areas or to protect the skin is discouraged as it has an affinity for moisture and may cause more harm than good. There are available several protective skin creams such as Diaparene and Kerodex® (Ayerst Laboratories) which provide effective barriers to skin maceration.

Occasionally in these patients (though more often in those in groups one and two), benefit can be derived in the female by persistent and properly executed Kegel perineal and urethral sphincter exercises.

A word of caution relative to the use of rubber external collecting devices in these patients is in order. Such items are usually unsatisfactory for several reasons. One is their propensity to develop uri-

niferous odors. Another is the likelihood of developing skin maceration of intractable dermatitis where they remain in contact with the skin. The Cunningham incontinence clamp is an effective but uncomfortable penile appliance which should be applied only for brief periods to prevent urethral injury.

When an indwelling Foley catheter is used to control urinary incontinence in the bed patient or paraplegic, it is advisable to tape the shaft of the catheter to the abdomen. This obliterates the penile-scrotal angle and prevents ulceration which can result in fistula formation at this point.

References

1. Saxton, Jeanie: Techniques for Bowel and Bladder Training, *Am. J. Nursing*, Vol. 62, No. 9, 69-71, 1962.
2. Smigel, Joseph O., and Russell, Ann: The Do's and Don'ts of Therapy for Decubitus Lesions with Emphasis on Use of the Electric Lamp, *J. Am. Geriatrics Soc.* 10:975-982, 1962.
3. Aaronson, Herbert, G., and Boger, William P.: Incontinence in the Elderly: An Attempt at Control, *J. Am. Geriatrics Soc.* 10:626-632, 1962.
4. There Is a Way: Washington State Department of Health, Olympia, Washington (film).
5. Smigel, J. O., Murphy, C. M., Love, K. J., and Gibson, J. H.: Care of the Skin in the Incontinent Aged, *J. Am. Geriatrics Soc.* 5:671-675, 1956.
6. Muellner, S. Richard: The Management of the Neurogenic Bladder, *Med. Science*, May 10, 1962, 725-732.
7. Kegel, Arnold H., and Powell, Tracy O.: The Physiologic Treatment of Urinary Stress Incontinence, *J. Urol.* 63:808-813, May 1950.

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Elderly People's Teeth

The Responsibility of Dentistry to the Total Health Care of the Aged

DAYTON DUNBAR KRAJICEK, D.D.S., *Mission*

MEDICAL SCIENCE has been successful in increasing the life span of our population during the past decade, and further extension seems evident. This period represents the anticipated, cherished, comfortable segment of life, salvaged and earned through years of diligent sacrifices and warrants more than the casual diagnosis followed by haphazard therapy. The significance of these predictions of increased longevity pose serious problems relative to the medical and dental care, for extended life without extended health is unbearable. Aging is not a disease but a natural evolutionary period of human life. Everyone who lives long enough eventually will attain old age. Old age therefore is inevitable, whereas disease is not.

Health Inventory

Daily clinical experience indicates that the fear some elderly patients assign to tooth loss is based largely on the fear of premature aging. Dentistry must recognize and surmount this challenge by creating artificial restorations which re-establish dignity to the mouth and face, defy detection at a conversational range and restore and maintain an individual oral age compatible with the other features of the face.

It is pertinent to the oral health inventory to question each patient regarding general systemic conditions for which he is being treated. A chronic illness may relate directly to the oral disturbance, influence the treatment plan and determine the ultimate success of the finished restoration.

Continued cooperation and consultation with the physician cannot be overemphasized. Chronic diseases which afflict elderly persons are apt to have an insidious onset, often without detectable symptoms. Severe complications can be averted only by early detection and treatment before advanced forms of the disease are evident. Notable among such conditions is heart disease, which is responsible for almost one-half the deaths among persons 65 years or over. Neoplastic lesions, cerebral hemorrhage and arteriosclerosis are other important causes. Mental disease has a particularly high incidence in the elderly. Pro-

gressive medical science now recognizes that treatment of aging consists not only of prevention and treatment of diseases incident to old age, but the actual aging process itself—through steroid hormones, etc. Sound dental therapy must be planned to cooperate in achieving the total health of the patient.

The key to gerodontics is a complete oral examination, a history of systemic diseases and past dental experience. The dentist must aim, in the patient's early life, to prevent those conditions which result in the early destructions and loss of teeth. Cooperation among the dentist, physician and patient will permit total health care for the elderly patient.

The complete oral and dental examination serves to determine the prognosis of each patient's condition. It must be thoroughly accomplished as quickly as possible for both patient and dentist. Visual and digital exploration should include examination of the lymph nodes, salivary glands, lip and buccal mucosa, palate, tongue and floor of the mouth, oropharynx, alveolar ridges, investing tissues, temporomandibular joints, edentulous oral mucosa, muscle attachments and an evaluation of the masticatory function.

This examination, however, provides only a superficial picture of the conditions. It always must be strengthened and supported by a thorough roentgenographic examination, and, when needed, study casts and pulp testing.

Edentulous regions must be evaluated roentgenographically on the basis of anatomic structures to assist in predicting the response of increased stress loads imposed by needed partial or complete dentures. Atrophy of disuse involving the residual ridge are common observations and examples of severe hindrance to successful denture construction.

Osteoporosis of edentulous regions demands further consideration. Adult bone may be deficient because

resorption is too great as in hyperparathyroidism, or because formation is inadequate as, for example, in osteoporosis or osteomalacia. Inadequate bone formation in osteoporosis is not due to the lack of calcification of the matrix, as shown by research by Albright and others, but rather to primary hypoplasia of the osteoblasts from decreased stimulus and disuse atrophy. Serum calcium and phosphorus levels are normal since this is not a disease of calcium metabolism. This evidence refutes the practice of indiscriminately prescribing calcium, and stresses further the value of constant collaboration with the physician. A local manifestation of osteoporosis also may be associated with a systemic debilitating disease such as diabetes mellitus, postmenopausal osteoporosis, or Cushing's disease.

Prevention

The fundamental approach to gerodontics must be that of prevention of those conditions which result in the early destruction of tissues and loss of teeth. Prevention, based on early discovery and attack of dental disease, will influence and benefit the elderly patients of the next generation to such an extent that today's treatment plan must be no longer applicable.

Treatment Considerations

Diet and nutrition constitute the most important single factor in treatment of the elderly, for therapy of any kind can reach its maximum effect only in the presence of adequate ingestion, absorption, and utilization of proper food. The relation of nutrition to periodontal disease is only one of the vital aspects of this important subject. Poor nutrition influences changes in the oral mucosa and seriously handicaps all treatment procedures. Most disease processes and aging changes can be attributed directly to the cumulative effect of improper nutrition through the years.

The influences of nutritional guidance, early detection and treatment of mucosal changes, and prevention of tooth loss in the adolescent from caries, resulting in malocclusion, must be accepted as the basic foundation for periodontal therapy. The elderly person with a toxic purulent discharge of advanced periodontal disease or extensive generalized pocket formation resulting from prolonged neglect is hardly a worthy candidate for conservative therapy. Constant use of the complete health inventory, coupled with sound judgment, allows the dentist to recognize dentitions which can be salvaged entirely or in part. Diagnostic acumen must serve as the guide to recognize the point of alveolar bone which will result in an unsatisfactory support for a denture base.

Prosthodontics

Prosthetic treatment must be directed toward rejuvenating the patient to normal senescence and promoting optimal health, for a person with poor artificial dentures can neither be happy nor enjoy food if his mouth hurts and he is unable to chew. Tissue and nutritional deficiencies, as well as psychic symptoms, contribute so predominantly to prosthetic failures that technical deficiencies never must be allowed to add to these.

Elderly patients with even sufficient diets rich in B complex vitamins, vitamin C, and calcium can exhibit clinically symptoms of vitamin and mineral deficiencies. These are manifested by glossitis, angular cheilosis and delayed healing. This paradox is explainable on an endogenous basis, for normal aging processes include a decrease in gastric acidity necessary for calcium and vitamin C utilization. Diminished liver function prevents absorption of both proteins and B complex vitamins. Utilization, therefore, bears the same importance as ingestion, thus the prosthodontist constantly must be aware of the importance of vitamin, mineral and protein deficiencies, their resultant manifestations, and direct influence on the success of the completed restorations. These patients are managed best through cooperation with a competent geriatrician. Vitamin therapy must only supplement dietary treatment, never replace it.

Summary

The need for further research and clinical study of the aging is mandatory. It is hoped that this paper will assist in promoting interest in this age group, for the progressive increase in life expectancy will serve as a continuing challenge. These geriatric patients can be helped best by strengthening the cooperative triad of dentist, physician and patient—thereby ensuring total health care.

References

1. Albright, F.; Smith, P. H., and Richardson, A. M.: Postmenopausal osteoporosis; its clinical features. *J.A.M.A.* 116:2465, May 31, 1941.

Great tranquility of heart is his who cares for neither praise nor blame.—*Thomas à Kempis*

Philosophy makes us wiser, but Christianity makes us better men.—*Henry Fielding*

Conversation is the slowest form of human communication.—*Don Herold*

Useful Living

The Philosophy of Rehabilitation

DONALD L. ROSE, M.D.,* *Kansas City, Kansas*

THE TRADITIONAL and cherished basis of medical practice has been and doubtless will always be the saving of life and the relief of suffering. Nearly everything done in the medical field has been concerned with these objectives. As a result of these efforts, improvement in community health, the ease of control of many acute infections, the extraordinary technical advances in many surgical areas, the ability to restart stopped hearts, the truly remarkable advances in the field of pharmacology, and many other similar examples not only comprise an imposing list but the achievements that result from it are so commonplace nowadays that they excite little except polite enthusiasm from the public. That which a generation ago usually resulted in a plea to the Almighty for its realization is now frequently the expected result in the course of routine care. We have come a long way indeed down this particular road.

There are two sides to this symbolic coin, however. The victory of the dramatic cardiac massage may seem quite hollow to those who must try to take care of the brain-damaged creature who once was a business executive or a husband or a wife or the apple of a parental eye. The amputee who never experienced the personal, marital and economic problems of the amputee until they were created just for him by his surgeon may wonder at times why it was so important to save him for these. The mentally retarded child will never know that intercurrent infections would likely, in bygone days, have stopped his sterile existence before it was well started, but his doctor will. For that matter, as the years ripen for each of us—thanks in large measure to our confreres—many of us will likely wonder whatever happened to Osler's Friend of the Aged, pneumonia. These are the facts as on occasion they are; most probably the forces which create them will continue.

The foregoing comments are not to be construed as indictments of the medical profession nor necessarily to dwell on its shortcomings. They are intended, however, to point out what is obviously true, namely, that the life-saving functions of medicine and the events which stem therefrom have now assumed mass proportions. That which a generation ago was a speck in the sky, is now the size of a man's hand; it

bids fair to overcast and obscure the horizon in another generation's time. Unless what? Unless the medical profession does what it has always done in the past—accepts the challenge thrust upon it. The challenges of rehabilitation are with us now.

Rehabilitation, meaning by its derivation, restoration of ability or aptness, has a greater significance today than ever before, partly due to the many successful measures to prolong, save or even restore life. We need to take a critical look at our new and increasing responsibilities in this field.

Rehabilitation is not a new medical word. It is an old word with a new look. It means different things to different people. It means different medical things to medical people. It probably will never mean the same thing to everyone. However, it can have a common core meaning to each of us, and it is to this point that the remainder of this brief article is concerned.

The word, rehabilitation, stems from the Latin *habilitas*, meaning ability or aptness. In a rather loose sense, the medical meaning would be concerned with ability or aptness again. Most important, however, is not the semantics of the word, but the philosophy of its usage and the implementation of this philosophy.

Throughout the various ramifications of medical practice, one finds strong tides of belief. We find the psychiatrist believing firmly in his approach to medical care, perhaps at times being impatient with any other treatment approach. The same may be said for the surgeon, the internist and for many other specialty areas. Such individuals are obviously and properly dedicated to the "rightfulness" of their beliefs. The same belief must also apply to rehabilitation, or there is not really any basis for the word, regardless of how it is used. If one really believes that endarterectomies will cure all strokes, there will be little rehabilitation for the majority of stroke victims. If one believes that the treatment for rheumatoid arthritis is steroid therapy, the majority of ar-

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thritics will become crippled to some degree as surely as they would have without steroid therapy. If we believe that rehabilitation is concerned only with the salvage of some shattered functions, or with physical therapy, or with social work, or with vocational placement, or with the development of more and more nursing homes, the word may mean something to the physician but it will likely not to the patient. We need to believe that we can, in the ancient sense of the word, provide ability again for our patients.

In contrast to many areas of specialty interest, rehabilitation is not a vertical but is a horizontal concept. It cuts across nearly all such areas. It has its beginnings in anticipation of a certain course of events and in attempting to alter it. It may properly begin with the first day of an illness or injury and continue for the remainder of the lifetime of the individual. It may be concerned with the leveling off of a progressive downhill course of events. It may be the picking up of what is left and making the best of it. It may be the unwillingness to quit trying to change the apparently unalterable. It is always a dynamic process which should begin with the physician—if he believes in it. If he believes in it, he will practice it. If he practices it, ability again is a realization for many, not a play on words by the physician.

LINCOLN, A DIAGNOSIS

In his day Abraham Lincoln often was the butt of cartoonists. He was stoop-shouldered, thin-chested, loose jointed, with abnormally long "spiderlike" legs and arms, large hands and feet, a narrow head. His ears were large and malformed, his eyes small and deeply placed in his head.

To Dr. Abraham M. Gordon of Louisville, Ky., these various characteristics suggest the diagnosis of the Marfan Syndrome, or arachnodactyly, "a heritable disease of connective tissue manifested in the skeleton, the eye and at times in the cardiovascular system."

In 1887, William Herndon, Lincoln's intimate friend and biographer, sought an answer to the question: "Why and how Lincoln differed from other men?" Letters survive asking help from "physicians, physiologists, histologists, anatomists, etc." Herndon long had been perplexed and puzzled by Lincoln's appearance, Dr. Gordon said.

In 1896, thirty-one years after Lincoln's death, Marfan first described a child with the skeletal deformities now associated with his name. "No wonder Lincoln was not recognized for what he was during his lifetime," Dr. Gordon remarked. He believes, however, that the Marfan Syndrome can be established in Lincoln's case.

For the heritable basis of the disease, the investigator points out that Lincoln inherited the intellectual

and physical qualities of his mother, the illegitimate daughter of "a nobleman so-called of Virginia." She, too, was abnormally tall for a woman, 5 feet 8 inches, weighing only 130 pounds. She carried a sad, melancholy facial expression. Lincoln's father was round-faced, his body of stocky build. A brother, Thomas, died at 18 years of age from what was called "Dropsy of the Chest," which suggests the boy died from congestive heart failure. "This arouses the suspicion that Tad Lincoln may have developed one of the many vascular complications found in the Marfan Syndrome," Dr. Gordon said.

It is known that Lincoln suffered from strabismus (deviation of the eyes) all his life and at 51 years of age had several attacks of double vision. Unfortunately there were no ophthalmologists in the United States in his lifetime to diagnose the condition.

"The spoken voice in patients with Marfan's Syndrome is often high pitched with a characteristic timbre . . . Lincoln is said to have had a high pitched tenor voice, almost girlish in quality. Facial asymmetry is often described as part of this syndrome," the author added. Conant, who painted Lincoln in 1860, complained of this problem.

In conclusion, Dr. Gordon suggested that the riddle of Lincoln's origin is possibly now soluble. "I would search for a Virginia family that carries the stigma of this disease who were probably neighbors of Joseph Hanks, Lincoln's great grandfather. If such a family can be uncovered I believe Lincoln's maternal grandfather will be found among them."

GORDON, A. M.: Abraham Lincoln—A Medical Appraisal, *Journal of the Kentucky State Medical Association* 60:249 (March) 1962.

HEART SOUNDS AND MURMURS ON LP RECORDS

The Kansas Heart Association now has available on a free loan basis, two 12 inch records prepared by George David Geckeler, M.D.

One record is titled "Heart Recordings" and presents normal and pathologic heart sounds with suggestions to help in self training.

The second record is titled "How to Listen to a Heart" and carries a lecture by Dr. Geckeler on techniques and examination illustrated by usual and unusual heart sounds.

The recordings are designed for individual use as a supplement to formal training or by the physician who wishes to review important auscultatory findings.

Please address your request for either or both records to the Kansas Heart Association, 633 Kansas Avenue, Topeka, Kansas. They ask that you return the records after one week of use.

Re-Education

Rx: Activities of Daily Living

ANITA M. ISAAC, M.D., *Wichita*

"GET THE PATIENT UP." "Up in chair." "Let him do anything he can." "Make him wait on himself." "Leave him in bed if that is what he wants." "Complete bed rest." These are physician's orders which are commonly found as nursing directives along with diet, medication, and so forth, on hospital charts. Activities of a physical nature are more completely broken down in the rehabilitation setting into so-called "Activities of Daily Living Program." Activities of daily living are described by Dr. Howard Rusk as "all those little things a person does for himself, that make him miserable if he is unable to do them." Such things include feeding himself, washing his teeth, his face, ad infinitum. Thus ADL is the terminology used to denote basic activities which are inherent to carry on daily life.

With the arrival of the standards, rules and regulations for adult care homes, recently written by the Division of Health of the Aging, Kansas State Board of Health, comes a prescription form including the word "Activities." It is the purpose of this paper to define this term as it applies to the chronically ill patient in any setting—nursing home, hospital or his own home.

Testing and Training the Patient

An examination is prerequisite to adequate medical prescription. The ADL test or examination is most effectively performed, *initially* by the attending physician asking specific questions of the patient, the relatives or the nurse. Questions often asked are: "Can you roll over in bed?" "Can you come to a sitting position in bed?" "Can you move about in the sitting position in bed?" "Can you move to the chair from the bed?" "Can you move from the chair to the car or toilet?" "Can you roll your wheelchair?" "Can you sit in the chair? How long?" "Can you feed yourself?" "Can you wash your face? Brush your teeth?" "Can you button your shirt?" "Can you take off and put on your pants?" "Can you use the toilet?" "Can you speak?" "Are there words you can't say?" "Can you understand?" "Can you reason things through?" "Can you stand? Can you walk? If so, do you use a walker or crutches?" "Can you walk up and down stairs?"

In neurologic and kinesiologic terms each of these activities require a complex set of motions and in-

tegrations. To the physician examiner, this kind of history seems redundant. It can, however, effectively set the goals for the activities program and is often the only real treatment that can offer improvement to the patient.

Physicians must become more aware of their responsibilities in the detailed prescription of Activities of Daily Living. This is a means of treatment, useful in augmenting the accepted regimen of drugs and diet, and is especially applicable to the chronically ill patient.

Examples of the Need for Testing

Case I

A 68-year-old, single, white, retired schoolteacher was admitted to the chronic section of the hospital from a nursing home in a distant city. History reveals three months ago she had a stroke with a left hemiplegia. After two weeks in a general hospital, she was transferred to a nursing home where she remained a bed patient. Examination revealed a tall, obese patient. She had a spastic paralysis of the left upper extremity which was also grossly edematous, and was held in external rotation. Any motion of the extremity was painful.

Communication with the patient was difficult. Over a period of time, history was elicited that she was able to move herself about in bed with aid of her good arm and leg, and that she thought she could sit in the chair and feed herself, although she hadn't done this.

From these two activities the remainder of the ADL program was constructed so that eventually she became a wheelchair patient who could be managed in a nursing home with one attendant to assist her in and out of bed.

There are no rigid rules for a prescription for activities of daily living, but the principle is first to be aware of the patient's abilities and then to add to them activity by activity. It is believed by most of us in the field of rehabilitation that there is an orderly procedure in moving forward with any handicapped patient. This procedure can be clearly understood by all parties caring for the patient. Documentation or procedure can be used to advantage to test abilities (*Figure 1*).

SISTERS OF ST. JOSEPH

PREADMISSION ACTIVITIES FOR DAILY LIVING
EVALUATION

Name

Please check those activities the patient is *now* able to perform. In right hand column indicate: 1) Length of time activity has not been performed, 2) Possibility of re-education. Use reverse side for additional comments. (Note: Activities range from independence to dependence.)

LOCOMOTION:

Walk		
Walk with Cane or Crutch		
Walk with assistance		
Wheelchair self-propelled		
Wheelchair		
Up in chair		
Bed dangling legs		
Moves in bed		

HYGIENE:
(TOILET ACTIVITIES)

Dresses self		
Dresses with assistance		
Bath or shower self		
Tub bath with assistance		
Toilet self-care		
Brushes teeth		
Brushes and combs hair		
Shaves or puts on cosmetics		
Washes hands and face		
Washes pubic area		
Washes extremities		
Manipulates bedpan		
Uses stool with assistance		
Incontinent		
Can do nothing for self		

EATING ACTIVITIES:

Feeds self		
Feeds self if food is cut		
Feeds self bread		
Holds glass		

SOCIAL ACTIVITIES:

Visits with family		
Hand activities (fine movements)		
Hand activities (coarse movements)		
Games: Current and previous		
Hobbies or handy work		
Previous hobbies (List)		
Interests (Sports, flowers, etc.)		
Previous interests		

COMMUNICATION:

Speaks		
Sign or writing		
Aphasia; Expressive		
Globular		
Motor dysfunction		

Date Signed

Figure 1. A simple form for physician evaluation of Activities of Daily Living used in the chronic rehabilitation section of St. Joseph Hospital and Rehabilitation Center. It is preferably completed prior to admission of the patient.

The ADL test is one of the important methods of determining disability, along with the muscle test, joint range examination, social history, psychologic and vocational evaluations.

The adult care home or nursing home has for many patients come to be a place to recover or improve from an illness in order to return home. For others it is a place to live out the remainder of their lives. In order to allow maximum comfort and time utilization, the activities program is of equal importance for this group.

Case II

A 72-year-old, widowed, college professor without close family was admitted to the chronic rehabilitation section from a general hospital. He had had a laparotomy with colostomy for abdominal carcinomatosis 30 days previously. Orders for treatment were to teach colostomy care, if possible, morphine p.r.n. for pain and ambulation activities as possible.

Activities of daily living testing revealed the only area of difficulty to be in his colostomy incontinence and his fatigue with physical activities. He was, however, able to participate in most sedentary recreational activities, walking to and from the day room and dining room with one assistant. This continued until three days before he died—on his 65th hospital day. Morphine demands did not increase during this period and he continued to visit with his friends fairly comfortably until his rapid demise.

The bed patient presents certain difficulties to a nursing staff which can often be surmounted only by increasing the number of personnel, recruiting family and volunteers to provide activities in the isolated room situation. Ordinarily, chronically ill bed patients fare better in a ward. Mobilized carts (*Figure 2*) for the healing decubitus help patients leave their rooms. Exercise and occupational therapy procedures can be given, if the patient has sufficient intellectual ability (*Figure 3*).

Healing fractures in the elderly, confused patients provide the most difficult problems for the activities staff. Purposeless motions delay healing, and restraints simply increase the patient's confusion and restlessness. He becomes noisy. Often orthopedists must sacrifice their principles of immobilization or use surgical methods of fixation or substitution in order to allow mobility.

Principles Supporting Activities of
Daily Living

It is a paradox that skilled nursing care for the chronically ill patient has not been available in the general hospital. Procedures used to treat acutely ill patients, such as bed rest, sedatives, isolation from families and assistance in self-care, are contraindicated in the treatment of chronically ill patients. There is a lessening of interest by medical and lay people in



Figure 2. Prone cart.

the ill person when it finally becomes obvious that he is not going to get well and return home. Often the nursing home and the family are left to do the best they can with little help or encouragement. "Housekeeping" details are out of the realm of scientific medicine and seem uninteresting. Medication has been the answer to the anxiety of the patient and family, rather than working with the details of "living with a disability."

Techniques of activities therapy vary from the individual therapies—passive, active-assistive, or resistive exercises given by the physical therapist or nurse—to group general exercise (Figure 4).

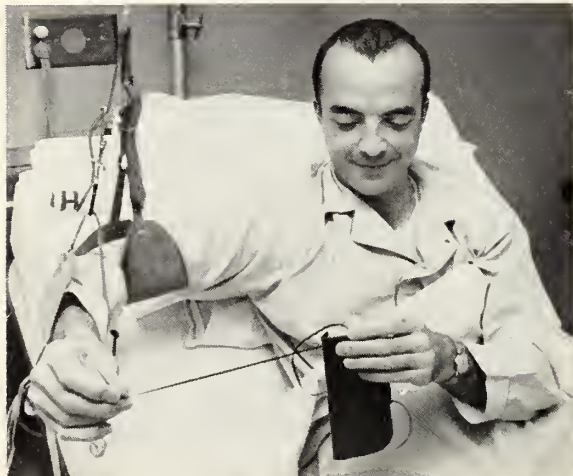


Figure 3. Occupational therapy in bed.

Ambulation or mobilization activities are usually done on an individual basis. The nurse, aide or physical therapist follows prescription of the physician for use of devices, bracing, or special instruction in gait training (Figure 5).

Occupational therapy, speech and recreational therapy activities can also be of a group or individual nature (Figures 6-8).

Dressing training, bowel and bladder training, and eating activities may need to be done on the ward, although some patients require special devices (Figure 9). In general, it is preferable to teach patients to use unmodified equipment since complex devices



Figure 4. Wand exercise. This group is doing general exercise in the sitting position. Nearly all motions can be actively stimulated in this position.

tend to disappear or are discarded. In any program for a specific patient, useful activities will evolve as they are integrated into the patient's living.

In a hospital setting where there is a change of shifts, it is difficult to carry activities through the 24 hours. Continuity must be maintained from shift to shift by all means of communication. Physiologically and psychologically, activities stimulate metabolic processes as well as mental processes, and prevent the secondary complications of disuse and contracture. The serious complications of immobilization were first recognized and have been accepted as primary principles by modern surgery in the last decade. General medicine has been less able to discard the ancient principle that bed rest is primarily curative and other things secondary. Alvarez, in a recent editorial in *Modern Medicine*, has commented on the difficulty of giving up old premises, even after they are proven



Figure 5. Gait training in parallel bars. (Photograph courtesy of *Wichita Eagle*.)

detrimental. Early mobilization shortens the course of the disease and the illness becomes less costly to the patient and his community.

Recently basic research in psychiatry has suggested that the experience of *isolation* is one of the most damaging to mental integrity, yet hospitals persist (with physician support) in secluding patients from the stimuli they need. Automation is threatening to

eliminate the nurse; visiting hours restrict the family and the patient's other community resources.

Factors Impeding the Activities Program

Generally, the same problems which the patient faced before the onset of his illness continue to operate now in addition to his acquired ones. If he is mature, he can be expected to be successful in a prescribed program. However, in order to proceed toward expected goals he will need to be treated by a skilled staff who understand his disability. An informed staff can provide better care, and the physician as leader is in the best position to know the patient's difficulty and help set goals. The family is involved in treatment and can impede or assist progress. "To exist is to persist." We tend to forget that the patient's innate goal is to improve despite the many factors operating to prevent this. However,



Figure 7. Hemiplegic patient doing art project.



Figure 6. Newspaper reading or conversation period.

improvement also depends on the skill of the medical people involved, on the equipment they have at their disposal and on their understanding of their limitations, as well as their abilities, in all areas. The structure must not be too rigid or too lax. Patients, however, must have an organized program which requires as much of their participation as possible, within the limits of their ability.

Case III

This is a 79-year-old, obese, widowed female who had a cerebral vascular accident with residual left-sided hemiplegia five years before admission to the chronic hospital unit. She had been cared for during this time by a series of nurses in hospitals, nursing homes, and in the home of her daughter. Following the initial illness it was known that she had received physical therapy in the hospital and at home with no



Figure 8. Retraining a hemiplegic hand.

improvement in her ability to care for herself. She was a bed patient; fed herself, but participated in no other self-care activities.

The patient's physician was out of town on the day of admission, and another physician wrote the admission orders. These did not coincide with the medication the patient had been receiving at home. The family and the patient came, bringing her medicine, and immediately there was an argument with the hospital staff.

During her hospital stay, the patient's complaints centered primarily about urinary urgency, requiring constant attendance by the nurse; the food, which was not the right amount or variety; and her refusal to get out of bed, although she had brought her own "Porta-lift." The family and patient complained of the staff's inability to operate the lift. The son and daughter participated daily in arguments with the staff. They carried complaints to other patients in the hospital and their families, as well as to the hospital administrator, who, in trying to satisfy the family's demands, found the staff hostile to her own suggestions.

Comment

Case III shows clearly the situation where the goals of the family are in conflict with the rehabilitation goals of the medical and hospital service. In the five years of the patient's illness, there had been a good

deal of effort put into helping her become more independent. Having had no success with this task, the family had no expectations that this hospital would be successful either. In fact, the family's efforts at controlling the kind of care to be outlined for her in the hospital only helped defeat the efforts of the staff. Success rarely results where failure is expected. Many a well-prescribed rehabilitation program meets with defeat because of this. Also, the family may well have been at odds with the patient and perhaps angry at her incapacity.

In the complex problems that present to a nursing home, the physician's obligation is to help the patient and also provide support for the nursing staff in their work. This also has legal implications for all parties, wherein risks of patient care of the chronically ill are

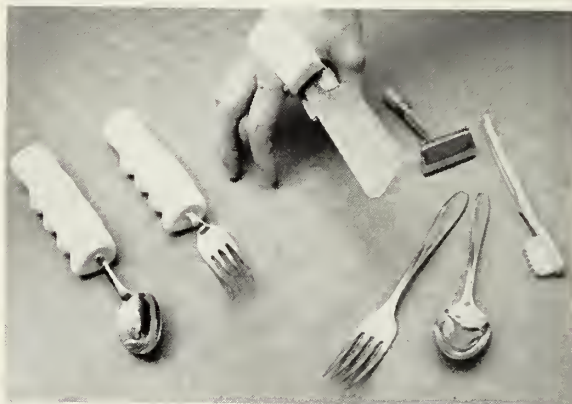


Figure 9. Devices for self-care.

considerable. Activities programs, if well supported, have not been found to increase complications but rather there has been a decrease in accidents reported following institution of such programs.

In conclusion, it is believed that physicians must become more aware of their responsibilities in the detailed prescription of activities of daily living. This is a means of treatment, useful in augmenting the accepted regimen of drugs and diet, and is especially applicable to the chronically ill patient.

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Medical Assistance

The Kerr-Mills Law for Kansas

OLIVER E. EBEL, Executive Director, *Topeka*

An analysis of the problems confronting the Kansas Legislature as it attempts to implement a program for health care of the aged.

Introduction

THE FEDERAL CONGRESS passed Public Law 86-778, known as the Kerr-Mills Law. Its purpose is to offer financial assistance to the states for giving health care to persons over 65 years of age who do not qualify for other forms of public assistance but who would experience an economic crisis if they were required to pay for the cost of health services. The law became effective October 1, 1960. Since that time, approximately half the states have acted to implement this program. It is expected that the 1963 Kansas Legislature will consider the question.

The Kerr-Mills Law

The Kerr-Mills Law is a considerable document providing federal aid to states in locally developed programs for the aged. One portion of the law somewhat revises federal aid for old-age assistance programs. Of principal interest here is the new program entitled "Medical Assistance for the Aged" (MAA). This program offers federal financial assistance to states providing health care for persons over age 65. Although a state plan must be approved by the Health Education and Welfare Department, much latitude in state programs is permitted.

The following quote on this subject is from HEW. "A state may, if it wishes, disregard in whole or in part, the existence of any income or resources of an individual for medical assistance. . . . An individual may be deemed eligible by the state notwithstanding the fact that he has a child who may be financially able to pay all or part of his care, or that he owns or has an equity in a homestead, or that he has some life insurance with a cash value, or that he is receiving an old-age insurance benefit, annuity, or retirement benefit." There are certain other requirements, such as a broadening of residence regulations and that medical service must include some non-institutional as well as institutional care. Federal finan-

cial participation is in accordance with the state average income as it relates to the national average income. No state will receive less than 50 per cent nor more than 80 per cent of the total cost of the program. There is no ceiling.

Experience in Other States

Approximately 24 states today operate an MAA program. Of these, only three, Hawaii, Massachusetts and North Dakota, are said to have comprehensive programs. As might be expected, there is wide variation among the different states. In some, eligibility requirements are broad but benefits restricted. In others, eligibility is restricted but benefits are broad. Many states define eligibility on the basis of earned annual income. The most common appears to be \$1,200 for the individual; \$2,400 for the family. The homestead and certain personal belongings are exempted when considering eligibility in some states.

In one state, this definition is used. A person is eligible when the "average monthly income over the 12 months is not expected to exceed the cost of his medical care plus the cost of his maintenance as determined by the standard of assistance for old-age assistance." Some states require the applicant to have paid a portion of his health care before he is eligible. This ranges generally between \$50 and \$100. A few states require relatives to aid to the extent of their ability before the applicant is considered eligible.

Benefits also vary from a very few hospital days care per year in some states to others with unlimited care if necessary. One state provides service for life-endangering conditions only. Some states include dental and nursing service, drugs, prosthetics, etc. The decision is entirely left to the individual state as to the type of program it wishes to offer. If this program complies with broad regulations, as defined by the law, the federal government participates.

The Kansas Situation

It is presumed the 1963 Kansas Legislature will implement the Kerr-Mills Law. This was endorsed in the platform of the Democratic and Republican Parties. The governor, in his message to the legislature on January 15, 1963, said in part that he recommended "... full implementation of Kerr-Mills. This

means simply that we will provide medical care to older persons who have enough money to live on, and therefore are not on old-age assistance, but who do not have the extra money required should an expensive illness befall them. Eligibility for this aid ought to be carefully and closely defined, but comprehensive medical services should be provided once the person is shown to be in actual need."

Analyzing the need and the potential cost of the program for Kansas is difficult. Conflicting statistics make a true assessment of the situation almost impossible. It is known there are something more than 28,000 persons on old-age assistance in this state. There are, perhaps, 230,000 persons over the age of 65 years. The income of these persons has also been variously reported. The following tabulation is perhaps below the actual figures.

	<i>Male</i>	<i>Female</i>	<i>Total</i>
<i>Total</i>	92,075	102,205	194,280
No Income	15,625	49,360	64,985
Less than \$1,500	42,595	38,715	81,310
\$1,500-\$2,499	13,170	3,710	16,880
\$2,500-\$3,499	6,415	1,375	7,790
\$3,500-\$4,499	3,060	550	3,610
\$4,500 and over	5,010	1,100	6,110
Not reported	6,200	7,395	13,595

When it is recognized that wives of well-to-do citizens will be listed as having no income, it will immediately be apparent that the above figures are not valid for any serious consideration on anticipated cost. Moreover, not all aged persons, even though otherwise eligible, will be sick nor will all eligible, sick, aged persons apply for MAA benefits. However, if the above figures were to be accepted at face value, the potential expense of an MAA program is quickly apparent.

For example, present health costs in the OAA program at greatly reduced payment to vendors averages \$12 per person per month. If this were transposed to the above table, there are 146,295 persons over age 65 in Kansas with an annual income of less than \$1,500. Such Kansas program would cost in excess of \$21,000,000 per year with the federal government paying somewhat more than half the total.

Another example. Kansas Blue Shield obtained figures from an actuarial firm estimating the cost of providing complete health care for persons over 65 years of age. Hospital rates are figured on a semi-private room basis. Physicians' fees are in accordance with Blue Shield Plan A. Drugs are at retail levels. The estimated cost is \$24.73 per person per month. If this were provided for 146,295 Kansans for one year, the cost would be \$43,414,504.20.

Another example. If anything near normal charges

are paid, the cost certainly will be not much less than \$20 per person per month or for each eligible person, \$240 per year. Should 100,000 be eligible, the cost is \$24,000,000.

Experience in other states proves not nearly all persons statistically considered eligible will apply for MAA benefits. The actual cost will be far below its theoretical projection. The examples cited above serve to illustrate the necessity for exercising care in the establishment of a program. It appears Kansas will attempt to carefully limit eligibility but will provide a broad base of coverage to those actually in need. It is obvious to everyone who is aware of the financial structure of this state that the MAA program must be based on a limited budget.

The Kansas State Board of Social Welfare

The Kansas State Board of Social Welfare has long considered this subject. Meetings have been held with them and with department heads. The legislative proposal is not yet written, but it appears the following will be the philosophy of the State Board of Social Welfare in its request to the legislature.

There will be a budget request for a new category of welfare, known as Medical Assistance for the Aged. It is anticipated eligibility will be similar to requirements listed for old-age assistance. Although this will necessitate the applicant to utilize much of his resources prior to being eligible, it is expected that many will receive care, possibly 1,000 to 1,500 a month, for medical assistance only and will ask for no other aid. The Board will expect the applicant to utilize his resources up to the limit of eligibility before MAA assistance is granted.

The State Board of Social Welfare is expected to request a uniform health care program for all counties of Kansas in keeping with recommendations of the Governor's Advisory Committee. In his message to the legislature, the governor of Kansas endorsed these recommendations. They state in part that \$18.03 per person per month will be allocated to the recipients of all categories of welfare for health care. Of this, \$10.05 is for hospitalization to pay costs or charges, whichever are less, for ward rates. Drugs will receive \$3.54 per person per month and will be paid on a reduced percentage of profit rate.

Physician services would utilize \$4.44 of this figure. A few samples of the physicians' charges are as follows: Up to \$4 an office visit; up to \$6 a home call, after the first two visits in any quarter are paid by the patient. In hospital care—first day, \$10; thereafter, \$3. Surgical services would be paid at \$1.80 per point on the Relative Value Scale. There are many other considerations in this extensive report of which the above are taken to serve as illustrations.

The Board of Social Welfare then expects to transfer approximately 3,000 old-age assistance cases to MAA, whereby an increase of federal participation could be obtained. An anticipated budget for the first-year cost of this MAA program is in the vicinity of \$1,600,000. The second year cost is expected to be about \$1,900,000, of which the federal government will pay 57.52 per cent. The state and the counties would share the remaining 42.48 per cent. It appears a budget in this vicinity has been recommended by the executive branch of the government. Now remains whether it will be accepted by the legislature.

The Kansas Medical Society Proposal

By action of the House of Delegates on May 2, 1962, implementation of the Kerr-Mills Law for this state was endorsed. The Society has frequently approved the policy of prepayment and certainly has established its position as interested in providing care for the aged.

The Kansas Medical Society is completely in accord with the principle of economy in government and endorses every move to avoid waste in government expenditures. The Society agrees that persons able to pay for their own health care should not utilize MAA benefits, but endorses the Kerr-Mills Law to aid those who otherwise would experience economic disaster when they are ill.

It appears to the Medical Society that full benefits might be given to those in need under the insurance principle if a series of stairstepped deductibles was employed without augmenting the over-all financial obligation. Kansas might broaden eligibility requirements to make the Kerr-Mills program applicable to persons with greater income and resources than the maximum allowable under OAA. At the lowest income level, a deductible of perhaps \$100 might be employed. This could be increased at various income levels to \$500 and higher. In other words, a person with an income adequate to care for his usual living expenses might be expected to pay the first \$500 toward his medical care and be eligible for MAA thereafter. If this could be tied to an insurance program, which, incidentally, is possible under the Kerr-Mills Law, the premium rate is dramatically reduced as the deductible increases. By way of example, Kansas Blue Shield expects, shortly, to offer a policy to senior citizens with a \$200 deductible clause and an 80 per cent co-insurance clause running until Blue Shield has paid \$5,000 in any one illness. This cost will be in the vicinity of \$8.50 per person per month. Compare this with the actuarial estimate of \$24 per person per month when total care is insured.

It would be possible to provide an insurance-type

program under Kerr-Mills in Kansas. A thirty day enrollment period might be set aside each year, after which all enrollment would be closed. Persons in need of care who had not taken advantage of the insurance program would be required to accept other forms of welfare assistance until the next enrollment period. Establishment of the applicant's financial status would serve to determine the deductible rate under which he would qualify.

Many would then purchase whatever deductible policy is applicable. From that point, the individual would provide for his health care exactly as any other insurance subscriber. It appears to the Kansas Medical Society this program might be placed into operation at a cost that would not exceed the cost of the program recommended by the State Board of Social Welfare. It is presumed accurate tabulations might be obtained to establish this fact.

Conclusions

The above notwithstanding, the Kansas Medical Society will cooperate with the Board of Social Welfare, with the governor of Kansas and with the legislature in an effort to achieve for the aged persons of this state a health care program under the Kerr-Mills Law that will alleviate the possibility of a financial crisis in the case of illness. It is recognized that a modest program may be required, but for those persons found eligible who otherwise could not pay for their health services, hospital, nursing home, physicians, nurses care and drug services should be provided.

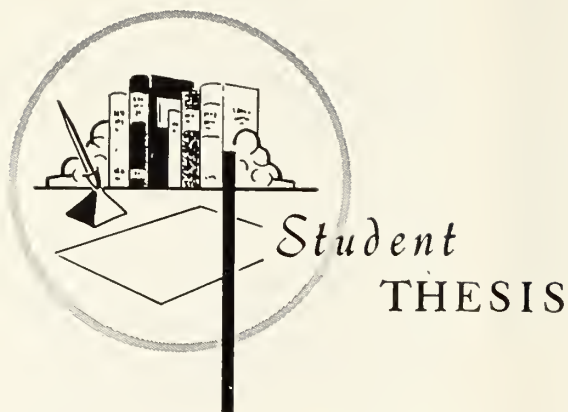
Whatever program may become the law for Kansas, the over-all philosophy should be followed that "Personal medical care is primarily the responsibility of the individual. Where he is unable to provide this care for himself, the responsibility should properly pass to his family, the community, the county, the state, and only when all these fail, to the federal government, and then, only in conjunction with the other levels of government, in the above order."

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Clues to Suicide

WAYMER J. STRAHM, M.D.,* *Honolulu*

SUICIDE is statistically rated eleventh on the list of causes of death in the United States. The actual rate is probably much higher since the cause of death in these instances is frequently hidden.

The scope of this paper will be restricted to a discussion of detecting these suicide-prone patients as determined by a review of the literature during the past ten years. There will be no attempt to discuss in detail the various etiologic, sociologic, cultural, ecologic, psychologic and other possible factors except as they may be directly related to the clinical detection and evaluation of the suicidal patient.

The actual prediction of suicide in a patient appears to be impossible at the present time; however there are certain clues present in the suicide-prone which can primarily be elicited from the patient, family, or friends while taking the patient's history. These clues and associated factors will be discussed after brief mention is made of the diagnostic types of patients that commit suicide. An important factor responsible for the difficulty in detection and evaluation of the suicidal patient is the fact that all diagnostic types of patients may attempt or commit suicide.

Schwartzberg states that "no single diagnostic category is helpful in predicting suicide potential." However, most authors agree that a feature associated with many suicidal patients is depression. According

to Mintz at least a third and probably most suicidal attempts are made by persons suffering from depression. Dax states that "from 50 to 70 per cent of the people who commit suicide are depressed. The specific type of depression does not particularly matter." He noted that while more of the elderly people were depressed before the act, more of the young were otherwise "emotionally disturbed."

Some authors suggest evaluating the suicidal patient from the viewpoint of syndromes. Stone describes a "Syndrome of Serious Suicidal Intent." He studied a series of seven suicidal patients with different psychiatric diagnoses but all having the following common qualities which he considered as a syndrome: (1) An obsessive compulsive character with latent passive homosexual features; (2) Possible symptomatic alcoholism; (3) A history of a relatively poor relationship with the father; (4) An interest in a sexually discredited woman about whom he is obsessed with jealous fantasies and ruminations which have a paranoid quality; and (5) A threatened rupture with or rejection by this woman.

Hirsh noted that a large number of suicide cases begin with three factors—loss, aggression and depression, which he calls the "LAD syndrome."

Clues From the History and Examination of the Patient

Clues from the chief complaint. Although most suicidal patients are depressed or are or have been recently otherwise "emotionally disturbed," many of them do not present themselves with definite psy-

* This is one of a group of theses written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be best by the faculty at the school. Dr. Strahm is now serving internship at the St. Francis Hospital, Honolulu, Hawaii.

chiatric symptoms. Frequently there are only vague or non-specific complaints to alert the doctor's suspicion of latent suicidal tendencies. Oliven's table demonstrates the non-specificity of many of the presenting complaints.

PRESENTING COMPLAINTS IN CASES OF SUICIDE

<i>No. of Cases</i>	<i>Complaint</i>
12	Directly suicidal symptoms (recent attempt, talk about suicide, suicide preoccupations)
21	General psychiatric symptoms ("nervous," "depressed," "memory slipping," "can't concentrate," "foolish thoughts & daydreams," panic reactions, abnormal grieving)
11	General physical symptoms (fatigue, "don't feel right," "always tired," "heavy feeling," numbness)
10	Digestive & nutritional symptoms (mostly loss of appetite and weight, "indigestion")
9	Insomnia or request for sleeping tablets
5	Continuous self-dosing with sedatives during daytime (3 cases), drug addiction (2 cases)
4	Dysmenorrhea, amenorrhea, "menopausal troubles"
4	Loss of sexual desire, impotence (in all 3 impotent patients this was a symptom, not a cause of a suicidal depression)
3	Episodic alcoholism
5	Under care for a chronic disorder (neurologic, malignant disease)
1	Obstinate eczema with secondary infection (scratching due to agitated depression)
1	"Frequent colds" (patient kept to bed exclusively with dubious colds, actually because of depressive apathy)
1	Desired rhinoplasty (manic-depressive, mixed type)
1	Desired circumcision (no genitourinary disease found; impulsive schizophrenic)
6	Suicidal tendencies as incidental finding (1 cardiopathy, 1 infectious mononucleosis, 1 tonsillitis, 2 prenatal examinations, 1 frequent colds)

Clues from the patient's recent history. A history of a suicidal attempt is a very significant factor increasing suicide risk, especially in the aged patient. Hirsh found that 12 per cent of those who attempt suicide in old age will make a second try and succeed within two years. Carstairs reports that people who have made one or more unsuccessful attempts have a suicide rate of over 2,000 per 100,000 as compared with rates in the general population which do not exceed 20 per 100,000 per annum.

Inquiry should be made regarding communication of suicidal intent. Mintz reports that over 50 per cent of persons committing suicide in a psychiatric or gen-

eral hospital have made previous suicidal attempts or have communicated their intentions to staff or family. Other authors report the percentage of suicidal patients communicating their intent as ranging from less than 30 per cent to at least 80 per cent.

The finding of a suicide note obviously should not be minimized. In Schneidman and Farberow's study 12 to 15 per cent of those committing suicide left notes.

In the patient under stress, recent changes may indicate increasing suicidal danger. The patient who may have been repeating that he *wishes* he were dead may state that he is *going* to be dead, or the patient who has been thinking of killing *himself* may one day remark that he is thinking of killing himself *and his wife*. Unexplained sudden changes in mood or behavior must always heighten the physician's suspicion, regardless of whether they are deteriorations or improvements. Alcoholism, whether recent or of long duration, may be significant. Schwartzberg finds that approximately 25 per cent of chronic alcoholics die by suicide. According to Batchelor, alcohol is less likely a factor with the aged than it is with younger, temperamentally unstable persons.

Patients who have recently "recovered" from a serious depression have an increased suicide risk. Mintz discusses a similar idea under the term "re-activation," stating that "of especial importance regarding the hospitalized suicidal patient is the finding that the most dangerous time, with respect to suicidal danger, is the period of initial home visits from the hospital and the first few months following discharge from the hospital."

Clues from the past history and family history. A history of previous episodes of depression and mental illness may be significant. The absence of suicidal attempts during previous depressive attacks is no guarantee against self-destructive impulses during subsequent attacks, although the risk is generally less serious in these cases.

In the aged suicidal patient "there was a family history of psychiatric abnormalities in the majority, and in 17 per cent of a series of 40 cases there was a family history of suicidal acts. An apparent familial manic-depressive trait is commonly important."

Parental deprivation, rejection or loss of parents or loved ones is an important finding in the history. A more specific statement is made by Oliven who notes that "a serious suicidal risk exists in certain despondent persons whose father, mother, guardian, or other 'important' relative died when the patient was between the ages of 4 and 6 or between 10 and 13." This finding is especially relevant when the dead relative was the object of the patient's ambivalence.

According to Batchelor, identification with, or the hope of rejoining, a dead person is a factor in per-

haps as many as a quarter of all suicide attempts, both in youth and in old age.

Moss and Hamilton consider that the most outstanding and consistent feature in the background of their series was the occurrence of a "death trend" in 95 per cent of cases. This involved the death or loss under dramatic and often tragic circumstances of individuals closely related to the patient, generally parents, siblings and mates. In 75 per cent of their cases the deaths had taken place before the patient had completed adolescence. In the remaining 25 per cent the "death trend" occurred later and precipitated the illness.

Hirsh discusses the "anniversary syndrome." A potent suicidal trigger is the anniversary of sad events, the broken engagement, divorce, and especially death.

Clues from the personal and social history. Relatives frequently report limited social adaptation due to personality traits such as undue sensitivity and shyness, dependency, egocentricity and restricted interests, anxiety and hypochondriasis.

Those who have lost much in social status financially or otherwise, particularly if the blow has been sudden or unexpected, are more likely to commit suicide than those who have always been used to little.

Henry and Short find that suicide rates rise during business depressions and fall during prosperity. They conclude that persons of high social status and those isolated from meaningful relationships are most likely to blame themselves and commit suicide when frustration occurs, since their behavior is relatively independent of the demands and expectations of others.

There is a direct relationship between the degree of urbanization and suicide rates. The steady rise of suicide from the tightly knit rural community to the anonymity of the city may reflect the strong relational systems of the rural small-town dweller and the relative isolation from meaningful relationships of many of the inhabitants of the large cities. Hirsh also mentions relational systems, concluding that the weaker these systems the more likely suicide will occur. Therefore, weak family, work, church and community relationships increase the susceptibility to suicide.

Clues from an evaluation of the patient's thoughts. Most "normal" persons have thoughts of suicide at one time or another, without prolonging them into suicidal brooding or translating them into actual impulses and attempts. The most frequently encountered morbid thoughts pointing to possible suicidal tendencies are baseless self-accusations and self-depreciation in depressed patients. Also hypochondriacal thoughts in depressed patients need careful evaluation.

Some discernment is required if a patient has an obsessive fear that he might commit suicide. In most cases this represents a phobia, quite harmless as to suicide risk.

In a case with depressive symptoms or with other "suicidal clues" present the patient should be questioned directly regarding suicide. For greater reliability this should be done when no relatives or friends are present. The patient's answers cannot usually be accepted at face value, but certain responses may be considered significant.

The most frequently reassuring reply that can be obtained is a qualified denial of some sort ("I'm thinking of it, but . . . too much of a coward . . . wouldn't do that to my family . . . my religion prohibits"). A plain "no" or unadorned denial, for instance, in an obviously depressed patient has little diagnostic value and should be discounted.

A hedging reply ("I don't know what to say," "Who can say?," "How much can a person take?") has nothing reassuring about it and is almost as significant as a veiled admission ("There seems to be no other way").

Unadorned admissions, brashly or defiantly uttered, have no clear prognostic value unless carefully explored. They are observed in some schizophrenics (dangerous), in an occasional mixed type of manic-depressive (dangerous), in hysterical psychopaths (usually harmless), and in adolescent maladjustment (harmless if handled properly).

Outbursts of anger and indignation in response ("How dare you ask?," "I'm not crazy") are not always to be taken in a reassuring sense.

Clues from the physical examination. There are no specific findings, but a few may have corroborating value. One or more transverse scars on the flexor surface of the wrist are evidence of a previous attempt. Linear scars about the neck should also be investigated.

In depressions the following syndrome is seen almost exclusively in the psychotic (more suicidal) type of patient: a combination of weight loss, some dehydration, cold and cyanotic extremities, slightly shallow respiration and sometimes a labile pulse rate. The basal metabolism may be depressed.

Psychological tests. Various psychological tests have been used in evaluating suicidal patients but there is no agreement as to their value. Oliven states that "clinical tests to establish the presence or seriousness of suicidal thoughts do not exist." However the tests may be of value in detecting a masked depression or a thinking disorder which would be a significant finding in evaluating the patient.

Schneidman and Lane believe that "the possibility

(Continued on page 72)



Mysteries of the Mediastinum

Edited by **CHARLES T. HINSHAW, JR., M.D.**

Dr. Stanley R. Friesen (Moderator): "Mysteries of the Mediastinum" is an appropriate title for today's conference. During the next hour I hope we can review the tumors which arise from or occur in the mediastinum.

Dr. Creighton A. Hardin (Surgeon): A 29-year-old white man, an inmate of the Larned State Hospital, was sent here following the finding of a mediastinal mass on his yearly chest x-ray. Annual chest x-rays taken the four preceding years were normal. The patient was totally asymptomatic and physical examination was entirely normal. The patient had tuberculosis 13 years ago which had since been inactive according to the records that accompanied him. Laboratory tests and an EKG were normal. Admission chest x-ray showed a large mass in the anterior mediastinum. It was circumscribed, rounded, non-pulsatile, dense and well demarcated. Other accessory work-up consisted of biopsy of non-palpable scalene lymph nodes and bronchoscopy.

Dr. Friesen: Why did you do a scalene node biopsy?

Dr. Hardin: We were suspicious that this was malignant because of its sudden appearance. We wanted to know if there was any extra-pulmonary spread.

Dr. Friesen: Were sputum studies done?

Dr. Hardin: At bronchoscopy, bronchial washings were done. These were reported as normal.

Dr. Friesen: So all we have is the x-ray finding of an asymptomatic mediastinal mass. Perhaps Dr. Kittle can enlighten us on the mysteries of the mediastinum.

Dr. C. Frederick Kittle: The mediastinum is a little bit like a grab box where you may reach for something without knowing actually what the final tissue diagnosis will be. There is no other area of the body where we have as many different types of tissues derived from all three of the basic germ layers in such a small, localized region. I think the best way to approach the diagnosis of mediastinal masses is on the basis of frequency and location.

If we consider the mediastinum from a lateral view of the chest, it may be divided into four parts: (1) the superior mediastinum, (2) the anterior mediastinum, (3) the middle mediastinum, and (4) the posterior mediastinum. The anterior and posterior mediastinal spaces lie respectively anterior and posterior to the reflection of the pericardium. The middle mediastinum lies between the anterior and posterior reflections of the pericardium and also between the two pleural reflections. Certain mediastinal lesions occur in certain regions, others may occur in all regions; all of them may be considered on the basis of frequency.

In the superior mediastinum we consider substernal extensions of the thyroid, aberrant thyroid tissue, parathyroid tumors, and aberrant parathyroid tissue. In the anterior mediastinum we most frequently see dermoids or teratomas, or as pathologists call them teratodermoids, which eliminates the difficulty of what they are going to call any one lesion. Pericardial cysts, sometimes termed "clearwater" or "springwater cysts" because of their clear fluid contents, also occur in the anterior mediastinum. Thymomas are common in this region also.

In the posterior mediastinum we see the neurogenic tumors, the duplication cyst that may involve the respiratory tract (bronchogenic cyst), or which may

Cancer teaching activities at the University of Kansas Medical Center are aided by grants from the National Cancer Institute, U. S. Public Health Service, and from the Kansas Division of the American Cancer Society.

contain gastric and intestinal mucosa (gastroenteric cyst).

In the middle mediastinum we most frequently encounter various types of lymphomas and granulomas. Certain lesions are common to all four parts of the mediastinum. Among these are metastatic lesions, all types of benign connective tissue tumors—such things as fibromas, myxomas, lipomas, and certain lesions which project into the mediastinum from the chest wall. Projections from the chest wall include the anterior meningocele which generally occurs as a mass in the posterior and inferior parts of the mediastinum, in contrast to the usual type of meningocele protruding posteriorly. Bony tumors may also project from the chest wall into the mediastinum.

A study of the frequency of mediastinal tumors in 874 patients showed 280 with neurogenic tumors, 240 of these being benign.¹ One hundred forty-nine teratodermoid tumors occurred in this series, 118 of them being benign. The gastroenteric and bronchogenic cysts accounted for another 116 mediastinal tumors, these again being mostly benign. Thymomas accounted for 94 of the patients in this series, and two-thirds of these were benign. Aberrant goiter occurred in 62 patients, and pericardial cysts were found in 53 patients. This series does not consider lymphomas or tumors of lymphatic tissue. When you see a mass in the mediastinum one must also consider the diagnosis of aneurysm, though we do not usually think of this as a tumor.

When confronted with a mediastinal mass, this is the sort of differential diagnosis you must run through your mind. Don't be too disappointed when you obtain a histologic diagnosis completely different from what was anticipated.

Dr. Friesen: The first bits of tissue we have to examine for diagnosis are scalene lymph nodes. Did they look normal to you, Dr. Mantz?

Dr. Frank A. Mantz (Pathologist): There were minute nodules of lymphoid tissue embedded in fat, all of which proved to be relatively normal histologically, except one. At the periphery of this scalene lymph node, beautifully outlined, is a peripheral sinusoid just as it enters one of the radiating sinusoids (*Figure 1*). In it there is a small cluster of cells that appear different from the adjacent cells. On higher magnification, these cells appear tightly clustered very much as though they are epithelial in origin. One cell looks very much as though it is about to undergo mitosis. We were much at a loss to classify this other than to say that it was indeed a malignant metastatic tumor. We were even somewhat reluctant to give complete assurance that it was carcinomatous. It's a cluster of rather anaplastic-appearing malignant cells with carcinoma favored over sarcoma.

Dr. Friesen: Could you have missed this on just a casual cutting of the lymph node?

Dr. Mantz: Yes, we could have.

Dr. Friesen: Dr. Hardin, what did you think of that? Did you think this was carcinoma of the lung with metastasis?

Dr. Hardin: Because of the location of the mass we thought it most likely a teratoma, teratocarcinoma, or thymoma.

Dr. Friesen: What were the operative findings?

Dr. Hardin: The mass was in the anterior mediastinum intimately attached to the subclavian vein, vena cava and pericardium. It extended subpleurally to the left side but did not involve the lung.

Dr. Friesen: Grossly, you thought it might be a thymic tumor?

Dr. Hardin: Yes, a malignant thymoma.

Dr. Mantz: The specimen which we received weighed 200 grams (*Figure 2*). It presented a pyriform outline and the external surfaces were lobular. The cut surface presented what might be classified as a rather classical appearance for either one of two lesions. First of all, it was homogeneous and exceedingly fleshy, as though a high degree of cellularity ex-

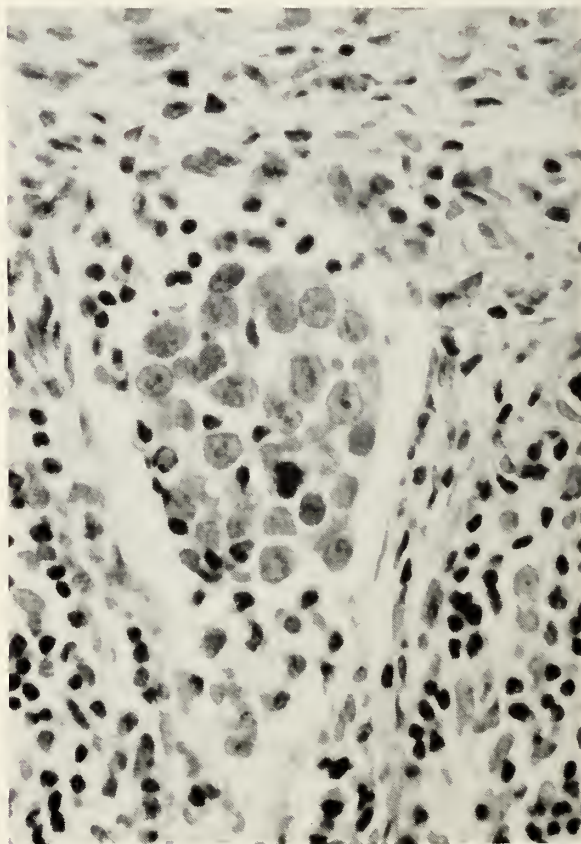


Figure 1. Scalene lymph node biopsy showing cluster of tumor cells in peripheral sinusoid.

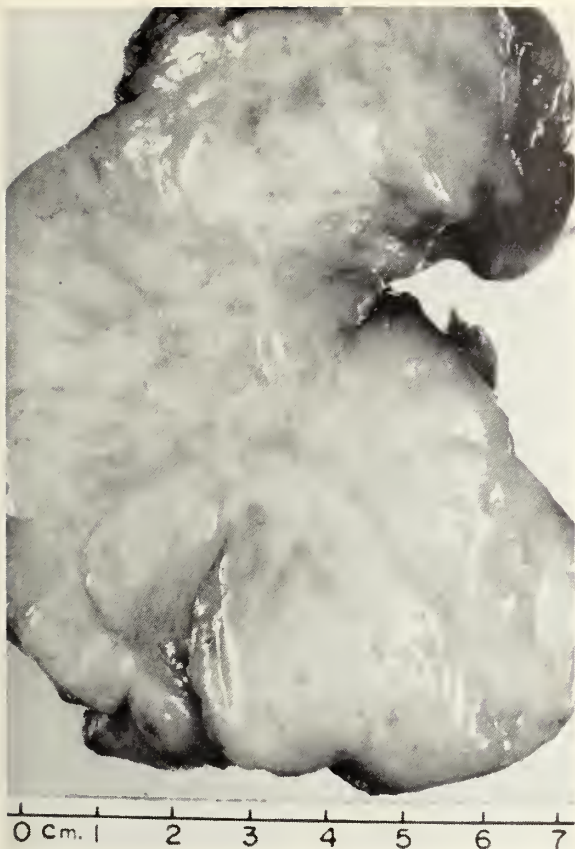


Figure 2. Gross lesion. Cut surface shows fleshy tumor and lobular configuration.

Dr. Friesen: Maybe it is a seminoma with metastasis to the chest.

Dr. Mantz: Yes, indeed, and this certainly was considered. You will note that in areas the cells appear somewhat more anaplastic and occasionally have an almost glandular pattern. Thus, we would wonder if this was a seminoma undergoing alteration into a more embryonal type of tumor, involving the mediastinum in the thymic area. Our first inquiry was how carefully had this man had his testes examined? We were assured that, as on all patients admitted to the surgical service, this had been accomplished with great thoroughness and that there was no evidence of any mass whatsoever. With this assurance, we felt that, pending some contradiction, this probably did represent a peculiar form of tumor which is rarely observed within the mediastinum, and I would say invariably involves the thymic area. This lesion is variously referred to as mediastinal seminoma, or germinoma of the mediastinum. Its histogenesis is much disputed and there are many theories concerning it. Outstanding among these are those held by Schlumberger who stoutly maintains that this is a form

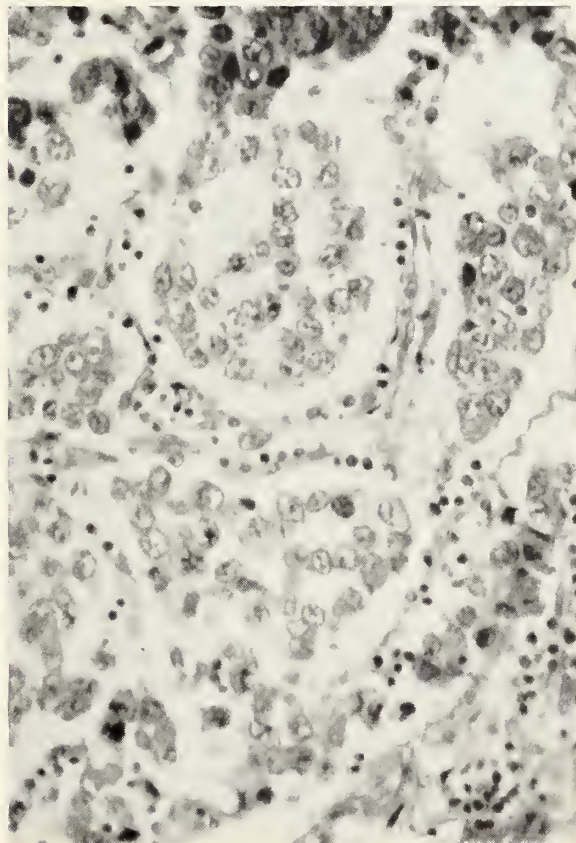


Figure 3. Photomicrograph of mediastinal tumor showing cords of cells separated by delicate fibrous bands containing lymphocytes, typical of germinoma.

isted. The fish-flesh appearance which this conveys would suggest that this might be lymphomatous. This is somewhat accentuated by the fact that there were trabeculae which course throughout the lesion suggestive of a mass of matted lymph nodes. Two other lesions, however, can have this appearance. One of these, the thymoma, often does have a lobular appearance. If told the lesion had come from a testis, then I'd say that this fits pretty well a seminoma, with its slightly yellow color. Microscopically, the tumor is composed of epithelial type cells which show a tendency toward a corded pattern, all being transected by relatively delicate bands of fibrous tissue (Figure 3). This is accentuated by higher magnification where a cord of epithelial cells identical to the nest of cells identified in the scalene lymph node biopsy is seen. Between these cords are strands of loose connective tissue in which there is a scattering of lymphocytes and many large mononuclear cells that almost suggest a granulomatous type of inflammatory reaction. Even without knowledge of where this came from, I believe I would say that this was testicular tumor, quite typical of a seminoma.

of thymoma representing some teratoid type of differentiation. Perhaps a more logical explanation, however, was voiced by Friedman who examined a number of these extragonadal type of lesions in 1951. He observed that some tumors noted in the pineal area, in the mediastinum, and in the retroperitoneal area, arise as independent primary neoplasms and have the same identical appearance to that of seminoma. He likewise observed their capability of differentiating into a type of embryonal carcinoma and also into choriocarcinoma, on the one hand, and into teratocarcinoma on the other. He postulated, and I think quite logically, that this represents some derangement or rest of the germ cells, presumably from the yolk sac, in the embryo along the course which they usually follow, ultimately reaching the gonad and giving rise to the germinal tissue in this area. So, then, it is my own personal belief that this is an extragonadal type of seminoma and that it is histogenetically identical to the similar tumor of the testis, the seminoma, and to the similar tumor of the ovary, the so-called dysgerminoma.

Medical Student: Is the prognosis of this tumor worse than that of seminomas?

Dr. Mantz: Generally not. The prognosis of mediastinal seminomas has been stated to be somewhat better than those in the testes. Their responsiveness to x-ray has been approximately the same.

Dr. Friesen: What about the treatment of this patient, Dr. Hardin? Are you going to offer him any other treatment?

Dr. Hardin: Unfortunately, this man died postoperatively. He was a management problem and eventually succeeded in pulling out his chest tubes and separating his sternal incision, leading to his death. Treatment of this type of tumor depends upon the ability to remove it surgically. Certainly, with this type of germinal epithelium, this patient should have been treated with x-ray following surgery.

Dr. Friesen: Dr. Tice, what help can the radiologist give us in the diagnosis and treatment of mediastinal tumors and of this tumor in particular?

Dr. Galen Tice (Radiologist): In diagnosing mediastinal masses the radiologist uses essentially the criteria outlined by Dr. Kittle. Actually, we can only make pertinent suggestions as to what the tumor may be. First the location of the tumor must be considered. Dermoid tumors, thymoma and teratomas usually occur in the anterior mediastinum. Tumors of nerve origin usually occur in the posterior mediastinum. Lymphomas are usually in the middle mediastinum and tend to show as bilateral hilar masses. Bronchial and esophageal cysts may also produce shadows of a mediastinal mass on the chest film. Certain radiologic features are helpful when considering mediastinal masses. For example, calcification may occur in thyroid tissue, in dermoids and in malignant teratomas.

A meningocele may be increased in size under the fluoroscope by the Val Salva maneuver and it can sometimes be seen to pulsate. Neurofibromas occurring in the posterior mediastinum may cause erosion of the vertebral foramen as they emerge through it into the posterior mediastinum.

I understand that the mediastinal germinomas, as seen in the present case, are sensitive to radiation.

Dr. Mantz: At autopsy, remnants of the tumor were found in four mediastinal lymph nodes and attached to the subclavian vein. Neither testicle showed evidence of tumor at autopsy.

References

1. Lindskog, G. E., Liebow, A. A., and Glenn, W. W. L.: Thoracic and Cardiovascular Surgery with Related Pathology, Appleton-Century-Crofts, New York, 1962.
2. Schlumberger, H. G.: Teratoma of the anterior mediastinum in the group of military age. A study of sixteen cases, and a review of theories of genesis: Arch. Path. 41: 398-444 (Apr.) 1946.
3. Friedman, N. B.: The comparative morphogenesis of extragenital and gonadal teratoid tumors: Cancer 4:265-276 (Mar.-Apr.) 1951.

Student Thesis

(Continued from page 68)

of obtaining important clues about suicidal ideation and affect through the use of psychologic tests seems to be substantiated, even though the need for continued intensive research with such instruments is indicated."

Other factors which may be of significance in evaluating the suicide risk. Weather may affect the suicidal patient. A drop in barometric pressure, leaden skies, storms and unremitting winds may precipitate a suicidal act. Also suicide is more frequent in the spring of the year and in the early morning hours.

The rates of attempted suicide are equal in males and females; however suicide deaths are three times more common in males.

Conclusions and Summary

1. Most suicidal patients have depression as either a primary or concomitant symptom, although all diagnostic types of patients may commit suicide.

2. The actual prediction of suicide is difficult, due to the many types of patients that may commit suicide and to the rarity with which each type actually does commit suicide.

3. The various factors involved in detecting the suicidal patient are discussed from the viewpoint of clues that may be elicited while examining the patient and taking the history.

EDITOR'S NOTE: References may be obtained by writing the JOURNAL, 315 West 4th Street, Topeka, Kansas.

The President's Message

DEAR DOCTOR:

The Council of the Kansas Medical Society met on January 20, 1963, and adopted some basic principles of policy. The principles, as listed below, will be presented to the House of Delegates at the Kansas Medical Society meeting in May for adoption as a matter of principle.

1. Personal medical care is primarily the responsibility of the individual. Where he is unable to provide this care for himself, the responsibility should properly pass to his family, the community, the county, the state, and only when all these fail, to the Federal Government, and then only in conjunction with the other levels of government, in the above order.

2. The principle of freedom of choice should be preserved for all health services.

3. The prepayment or insurance principle will best protect the individual against the costs of medical care. Such programs should provide a broad range of benefits and should be available to persons of all ages.

4. Persons financially able to prepay their own expenses are expected to do so and must be encouraged rather than compelled to do so.

5. The medical profession has an obligation, together with the Department of Social Welfare, to provide the indigent of this state with necessary health care at maximum fiscal efficiency.

6. The Medical Assistance for the Aged sections of the Kerr-Mills law are intended to provide health services to individuals not otherwise eligible for public assistance, but who extended or catastrophic illness would otherwise place under public welfare. Such funds are not intended to replace state financing of existing programs or to replenish general funds.

7. Medical Assistance for the Aged under the Kerr-Mills law is intended to supplement, rather than to replace, individual prepayment or health insurance.

8. Medical Assistance for the Aged under the Kerr-Mills law should provide any type of treatment or facility medically necessary to the individual's care, but only to the degree that the costs of those services if paid from the individual's resources would cause such reduction in his standard of living as to require him to apply for public assistance.



Norton L. Francis M.D.

President



State Meeting 1963

The Kansas Medical Society Annual Session will be held in Salina, April 29—May 1, 1963. We recommend these dates be marked on your calendar and hope each member will find it possible to attend.

The Saline County Medical Society has prepared an outstanding scientific program consisting of individual presentations and symposia. In addition to scientific presentations, Edward R. Annis, M.D., president-elect of the American Medical Association will address a noon luncheon on Tuesday, to which the public is invited. He will be the banquet speaker for physicians and their wives that evening.

Scientific sessions and exhibits will be presented in the beautiful Student Center at Marymount College. This building is ideally constructed for the purpose of such meetings. You will find the theater comfortable and attractive.

The annual golf and shooting tournament will be held on Monday, April 29. The Annual Sports Banquet will be at the Salina Country Club that evening. A buffet dinner will be served and the usual entertainment and awards will be presented following the dinner.

The House of Delegates will convene Monday, April 29 for breakfast at 7:30 a.m. This first session will be concluded before noon, in ample time for all delegates to participate in the sports events of the day. The reference committees will meet at the Student Center of Marymount College on Tuesday. The second session of the House of Delegates, where the election of officers is held and resolutions are voted upon, will meet Wednesday, May 1, at noon. On Wednesday afternoon meetings of the various specialty societies will be held in places to be announced later.

The Annual Banquet will be Tuesday, April 30, at the Officers Club at Schilling Air Force Base, Salina. There will be a program of entertainment

and on this occasion Dr. Edward R. Annis will address the Kansas Medical Society.

Salina has two principal hotels and many motels. A list of these will shortly be mailed to each member so you may make your reservations. The Kansas Medical Society looks forward with pleasure toward this meeting, the first in many years to be held in Salina. You will find it an exceptional experience in the area of scientific information, in the business affairs of this Society and in social events. It is hoped each member will plan to attend.

Here's Comparison Of U. S. and Russia

(The following article was received from the Kansas State Chamber of Commerce.—Ed.)

American Economic Foundation offers some enlightening comparisons that bring into sharper focus just how far communist Russia is lagging behind the United States in economic growth.

Using figures from the St. Paul Area Chamber of Commerce, AEF points out that in order to achieve equality with Soviet Russia, we Americans would have to:

1. Abandon three-fifths of our steel capacity.
2. Abandon two-thirds of our petroleum capacity.
3. Scrap two out of every three of our hydro-electric plants.
4. Forget over 90 per cent of our natural gas.
5. Eliminate 95 per cent of our electric motor output.
6. Rip up 14 of every 15 miles of our paved highways.
7. Destroy two of every three miles of our railroads.
8. Sink eight of every nine of our ocean-going ships.
9. Junk 19 of every 20 of our cars and trucks.
10. Slash all paychecks by three-fourths.
11. Transfer 60 million Americans back to the farms.

12. Destroy 40 million television sets.
13. Rip out nine of every 10 telephones.
14. Tear down seven of every 10 houses that now stand.

Bringing the comparison closer, American Economic Foundation reports that while an American worker is earning \$16 for an 8-hour day, a Russian worker earns about \$2.25.

In hours of labor, a Russian pays about 13 times as much for a suit of clothes, 30 times as much for a pair of shoes, three times as much for bread, and six times as much for milk.

"It would seem," says AEF, "that in spite of Russia's 'economic miracle' we are still comfortably ahead."

Preceptorship Program

For the second consecutive year, The Sears-Roebuck Foundation and Student American Medical Association Foundation will sponsor a preceptorship program to acquaint medical students with general practice work in small communities.

According to James T. Griffin, Foundation president, and Russell Staudacher, executive director of

the Student AMA, ten preceptorships will be granted during 1963 to junior and senior medical students who spend two consecutive months with physicians in communities which have built clinics under the Sears Foundation's Medical Assistance Program.

Each preceptor will receive a \$500 scholarship. In addition, the community where he works will provide the preceptor's room and board.

Interested students must submit applications, available through SAMA chapters, to the executive director of the SAMA in Chicago. Announcement of the winners will be made in March.

Started in 1958, the Medical Assistance Program has assisted 65 small communities throughout the United States secure the services of physicians. Another 16 communities currently have medical clinics planned, under construction, or are seeking the services of doctors.

Under the 1962 preceptorship program, Student AMA members worked in Manhattan, Montana, Champlain, New York, Chetek, Wisconsin, Anthon, Iowa, Dover, Tennessee, and Pine Bluffs, Wyoming, all communities which have built medical clinics and secured the services of doctors with the help of the Sears Foundation.

THE KANSAS MEDICAL SOCIETY

Annual Meeting

April 29-May 1, 1963

Salina

Marymount College

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Along The BOOKSHELF

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RECENT ACQUISITIONS

- Arieti, Silvano. American handbook of psychiatry, 2 vol. Basic Books, 1959.
- Duke-Elder. A system of ophthalmology, vol. VII; The foundations of ophthalmology. Mosby, 1962.
- Comroe, J., et al. The lung, clinical physiology and pulmonary function tests. Yearbook, 1962.
- Cumley, C., ed. Yearbook of cancer, 1961-62. Yearbook, 1962.
- Ciba Foundation. Curare and curare-like agents. Little, Brown, 1962.
- Hollaender, A. Radiation protection & recovery. Pergaman, 1960.
- Ciba Foundation. Exocrine pancreas. Little, Brown, 1961.
- Wolberg, Lewis. Technique of psychotherapy. Grune & Stratton, 1954.
- Ackerman, Laurence. Cancer, diagnosis, treatment, and prognosis, 3rd ed. Mosby, 1962.
- Saul, Leon. Emotional maturity, 2nd ed. Lippincott, 1960.

MONOGRAPHS AVAILABLE IN THE LIBRARY

Endocrinology (con't)

- Muller, Alex, et al. International symposium on aldosterone. Little, Brown, 1960.
- Harrison, R. Adrenal circulation. Thomas, 1960.
- Soffer, Louis. The human adrenal gland. Lea and Febiger, 1961.

Dermatology

- Baer, Rudolf. Atopic dermatitis. Lippincott, 1955.
- Lenner, Marguerite. Dermatologic medications, 2nd ed. Yearbook, 1960.
- Lever, Walter. Histopathology of the skin, 3rd ed. Lippincott, 1961.
- Lewis, George. Practical dermatology, 2nd ed. Saunders, 1959.

- Ormsby, Oliver. Diseases of the skin, 8th ed. Lea & Febiger, 1954.
- Pillsbury, Donald. A manual of cutaneous medicine. Saunders, 1961.
- Pusey, William. Disease, gadfly of the mind, especially the stimulus of skin diseases in the development of the mind. H. K. Lewis & Co., 1934.
- Rothman, Stephen. Physiology and biochemistry of the skin. Univ. of Chicago Press, 1954.
- Sauer, Gordon. Manual of skin diseases. Lippincott, 1959.
- Schwartz, Louis. Occupational diseases of the skin. Lea & Febiger, 1957.
- Shelley, Walter. Classics in clinical dermatology. Thomas, 1953.
- Sternberg, Thomas. Modern dermatologic therapy. McGraw-Hill, 1959.
- Sutton, Richard. Diseases of the skin, 11th ed. Mosby, 1956.
- Simons, R. Handbook of tropical dermatology and medical mycology. Elsevier, 1952.
- Tobias, Norman. Essentials of dermatology, 5th ed. Lippincott, 1956.
- Waldbott, George. Contact dermatitis, American lecture series. Thomas, 1953.

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CURRENT THERAPY—1962. By Howard F. Conn, M.D., Editor. Published by W. B. Saunders Company, Philadelphia. 790 pages. Price \$12.50.

Probably every physician at least occasionally encounters an unfamiliar therapeutic situation. He may have a good general idea of the therapeutic problems involved, but may not be entirely clear concerning the details of management. Under these circumstances he needs to have readily available up-to-date, authoritative information concerning the regimen appropriate to the problem. *Current Therapy* which is revised annually is designed to supply this information in a convenient form, and, generally speaking, does so rather well. It is now in its 14th edition, and has become a familiar fixture in physicians' offices, libraries, and staff rooms so that it probably needs no introduction to most physicians. Its popularity throughout the years testifies to its usefulness.

The general format remains the same with 12 consulting editors and approximately 300 contributors assuming responsibility for keeping the 16 major sections of the book up to date. The large number of contributors makes annual revisions possible, and puts the stamp of authoritativeness on each article. As would be expected, however, the literary quality of the numerous articles is a bit uneven, and other authorities would undoubtedly question some of the dogmatic statements of their colleagues.

The articles are brief and provide the physician with a synopsis of the treatment of a multitude of conditions, but other sources will be sought by the reader who desires a complete discussion of details—particularly of the theory and the rationale behind the various therapeutic regimens.

The end papers are devoted to normal laboratory values of clinical importance, and provide a convenient source of reference in this day of ever-increasing complexity of reports from the clinical laboratory.

The book is well made, adequately indexed and contains an abundance of tables which will be welcomed by most physicians.—*J.D.R.*

PHYSICAL DIAGNOSIS, Ralph H. Major and Mahlon H. Delp. W. B. Saunders Co., Philadelphia, 1962. 355 pages illustrated, \$7.50.

It is perhaps redundant in the State of Kansas to review the most recent and sixth edition of *Physical Diagnosis* by Doctors Major and Delp, a contribution well-known to the products of medical education at the University of Kansas. This edition like its predecessors is outstanding for its selection and reproduction of its illustrations. Equally effective are its verbal descriptions of physical findings which are both accurate and colorful. A useful adjunct to the library of a medical student, it has few peers in its class, and no doubt finds use as a reference in the library of the practicing physician.—*J.A.S.*

PROBLEMS IN SURGERY—From Surgical Grand Rounds at the New York Hospital-Cornell Medical Center, Frank Glenn, M.D., George E. Wantz, Jr., M.D. The C. V. Mosby Company, St. Louis, 1961. 512 pages, \$16.50.

This is a series of case histories, numbering 152 in all, and taken from the Grand Rounds of the Department of Surgery at the New York Hospital-Cornell Medical Center. The conversational tone of the presentations will remind every student of medicine of his clinical days in training. The presentations are forthright and differences of opinion are exchanged quite freely. Failures as well as successes are reported carefully and one gains the feeling that he is actually attending the Grand Rounds with the members of the staff in person. The material is arranged in 12 chapters, according to subject matter and covers a wide range of subjects, including thoracic and abdominal surgery and urological, neurosurgical, plastic and orthopedic specialties. Endocrinology is treated in a separate chapter. A final chapter is given to miscellaneous surgical problems.

Whereas the book is not presented as a textbook, it nonetheless becomes a valuable reference work as

(Continued on page 80)



Personalities—IN KANSAS MEDICINE

Bill L. Gardner, Winfield, was named superintendent of Winfield State Hospital and Training Center effective the first of the year. His appointment was announced by the director of institutions for the State Department of Social Welfare in December.

Jack W. Welch, Halstead, was elected to Fellowship in the Society for Academic Achievement in December.

Ralph R. Reed, Lawrence, served as moderator for a panel of four experts who discussed the pesticide-wildlife problem at a recent meeting at the University of Kansas.

The superintendent of the Lyons public school system announced in December the appointment of **Roosevelt Leonard**, Lyons, as consultant medical advisor and school health officer.

Anna M. Wenzel, E.E.N.T. specialist of Hays, announced her retirement effective the first of January. Dr. Wenzel has been practicing in Hays since 1937 and plans to remain there after her retirement.

Frank W. Masters, Kansas City, attended the sectional meeting of the American College of Surgeons in Phoenix in January. He participated in a panel discussion on "Soft Tissue Trauma." Dr. Masters proceeded from Phoenix to Vellore, Madras, South India, where he will be visiting professor in plastic surgery, returning to Kansas City, around the first of May.

William P. Williamson, Kansas City, will be among the 26 physicians who will make up the final team of "rotators" serving aboard the hospital ship S. S. HOPE during its current visit to Peru.

The Geary County Association for Mental Health re-elected **Robert M. Carr**, Junction City, president at their December meeting. **Robert E. Grene**, also of Junction City, was elected vice president.

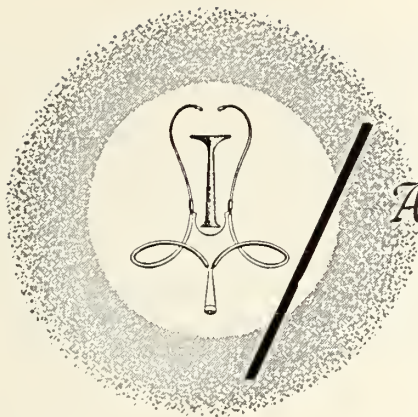
Dr. and Mrs. Carl Stensaas have moved from Arkansas City to Denver, where Dr. Stensaas will begin a three-year residency in dermatology at the University of Colorado Medical Center.

Paul Leffler, Pittsburg, was among the speakers at the first annual college-high school occupations preview conference held in Pittsburg in December.

Alfred Heilbrunn, Kansas City, has been awarded a clinical fellowship by the American Cancer Society for research and training in treating cancer patients. He is in his second year of clinical training at the University of Kansas Medical Center.

Kansas x-ray technicians attended an institute and seminar on radiography and related fields held in Topeka in January. Among the speakers at the two-day meeting were the following physicians from Topeka: **J. K. L. Choy**, **Wendell Nickell**, **Benson Powell**, **D. Bernard Foster**, **M. E. Pusitz**, **Willis L. Beller**, **D. R. Bedford**, **G. Bernard Joyce**, **Robert P. Woods**, **J. W. Travis** and **Homer L. Hiebert**. Approximately 75 technicians attended the meeting.

Six Kansas physicians were recently honored by the American College of Physicians. Designated as Fellows were: **Charles M. Poser**, Kansas City; **William E. Larsen**, Leawood; **Joseph M. Stein** and **Newman V. Treger**, both of Topeka. **Roy W. Menninger** and **William Tarnower** of Topeka, and **Frank J. Brosius, Jr.** of Wichita were elected Associates.



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the DOCTOR'S CALENDAR. Notice of the session is posted in advance to allow the physician time to make preparations.

FEBRUARY

Northwest Missouri Chapter of the Missouri Academy of General Practice and the University of Kansas School of Medicine postgraduate program, *The Small Laboratory*, February 19. Contact: John P. Mabrey, M.D., Plattsburg, Missouri.

The next meeting of the Kansas Chapter of the American College of Chest Physicians will be at 6:30 p.m., February 15, 1963, in the Walnut Room of the Ambassador Hotel in Kansas City, Missouri. This will be a dinner and meeting preceded by a social hour beginning at the above-mentioned 6:30 p.m. Speaker of the evening is Benjamin M. Lewis, M.D., Professor of Medicine, Wayne State University, Detroit, Michigan, who will speak on "Factors Affecting Prognosis in Emphysema." Wives are invited to the dinner as are guests and friends of the members of the Kansas Chapter of the American College of Chest Physicians.

A Regional Meeting of the American College of Physicians will be held February 22, 1963, at the Broadview Hotel, Wichita.

The Regional Meeting is one of the postgraduate education activities of the American College of Physicians. The one-day session will stress newer aspects in the treatment and diagnosis of internal diseases.

Among the honored guests will be Thomas M. Durant, M.D., Philadelphia, Treasurer of the American College of Physicians, and William C. Menninger, M.D., Topeka, Regent of the College and President of the Menninger Foundation. Dr. Menninger will speak at the noon luncheon.

MARCH

American College of Physicians postgraduate courses:

Mar. 4-8 *Physician Methodology in Medical Research*.

Massachusetts Institute of Technology, Cambridge.

Mar. 18-23 *Recent Advances in Cardiovascular Disease*, Mount Sinai Hospital, New York City.

Contact: E. C. Rosenow, Jr., M.D., Exec. Director, 4200 Pine Street, Philadelphia.

Department of Postgraduate Medical Education, University of Kansas School of Medicine postgraduate courses:

Mar. 11-13 Pediatrics.

Mar. 18-19 Cardiac Auscultation.

Contact: The Department of Postgraduate Medical Education, University of Kansas School of Medicine, Rainbow Boulevard at 39th Street, Kansas City, Kansas.

The next examination for Certification in Occupational Medicine will be held March 16, 17, and 18, it has been announced by the American Board of Preventive Medicine. The examination has been scheduled at the Sheraton-Park Hotel in Washington, D. C. Applications for certification should be sent to Tom F. Whayne, M.D., Secretary-Treasurer, American Board of Preventive Medicine, 4219 Chester Ave., Philadelphia.

The Department of Otolaryngology, University of Illinois School of Medicine postgraduate course, *Laryngology and Bronchoesophagology*, March 18-30. Contact: The Department of Otolaryngology, University of Illinois School of Medicine, 1853 W. Polk, Chicago.

The American Cancer Society, Kansas Division, Annual Midwest Cancer Conference, March 29-30. Contact: American Cancer Society Kansas Division, Inc., 824 Tyler, Topeka.

American College of Allergists Graduate Instructional Course and 19th Annual Congress, March 24-29, Americana of New York, New York City. Contact: John D. Gillaspie, M.D., Treasurer, 2141 Fourteenth Street, Boulder.

Fourth Oklahoma colloquy on advances in medicine, *Pulmonary Insufficiency*, March 28-30. University of Oklahoma Medical Center auditorium. Presented by the University of Oklahoma School of Medicine in cooperation with the Oklahoma Tuberculosis Association and the Oklahoma Thoracic Society. Address inquiries to: Robert Byrd, M.D., University of Oklahoma School of Medicine, Oklahoma City.

The Fifteenth Annual Teaching Seminar of the International Academy of Proctology, March 16-21, 1963, Las Vegas, Nevada. Jacob Reichert, M.D., President-Elect, Phoenix, Arizona.

Second annual spring hospital workshop program, Kansas City Southwest Clinical Society—March 18. The session will include workshops on dermatology, repair of hernias, surgery of varicose veins, electrocardiography, problems of head and face injuries, anorectal surgery, gastrointestinal radiology, orthopedic, vaginal surgery. Featured speaker at the evening dinner will be Edward R. Annis, M.D., president-elect of the A.M.A. Contact: Kansas City Southwest Clinical Society, 3036 Gillham Road, Kansas City 8, Missouri.

More than 50 scientific papers will be presented at the 1963 American Industrial Health Conference which will be held at the Sheraton-Park Hotel in Washington, D. C., March 18-21. This medical-nursing conference is staged annually by the Industrial Medical Association and the American Association of Industrial Nurses.

To be given particular attention at the Industrial Medical Association's 48th annual meeting will be reports from well known authorities on such subjects as criteria for disability evaluation, silicosis in the metal mining industry, new therapeutic approaches to primary myocardial disease, newer concepts of shock, the role of the physician in space medicine, the common cold syndrome, the woman worker from the gynecological viewpoint, and occupational mono-neuropathies.

Dr. John L. Norris, Medical Director, Kodak Park Works, Eastman Kodak Company, and general conference chairman, said the four-day meetings will include many other discussions on progress in the control of occupational health hazards and on the latest aspects of preventive medical services in industry.

Participation in the conference is open to anyone who desires to attend, including physicians, nurses, industrial hygienists, safety engineers, health physicists, management and supervisory personnel.

She laughs at everything you say? Why? Because she has fine teeth.—*Benjamin Franklin*

Book Reviews

(Continued from page 77)

one reviews the table of contents and then notes the exhaustive index which is provided.

The case history form of presentation makes for easy reading and, so far as this reviewer is concerned, provides an entertaining quality that is lacking from a textbook. This is not a book for beginners, but will take the practicing surgeon into many problems that are uncommon in daily practice and at the same time remind him of recent developments in the thinking pertaining to these problems. It is a distinct contribution to the surgical literature of today.—*T.P.B.*

RESPIRATION IN HEALTH AND DISEASE, R. M. Cherniack, M.D. and L. Cherniack, M.D. W. B. Saunders Company, Philadelphia, 1961. 403 pages.

This is a very good review of basic studies, manifestations, patterns and assessment of respiratory disease. It is very well written, easy to understand and covers the noted subjects very well.

It is a valuable book to the doctor interested in diagnosis and treatment of respiratory diseases.—*W.N.*

Nearly 1,000,000 American men, women, and children were injured or killed last year because an automobile driver exceeded the speed limit.

Cars that ran away—with no driver behind the wheel—killed 30 people in the United States last year.

NEW MEMBERS

The JOURNAL takes this opportunity to welcome these new members into the Kansas Medical Society.

B. A. Gillen, M.D.
Providence Hospital
Kansas City, Kansas

J. L. Scates, M.D.
223 N. Main
Ulysses, Kansas

C. G. Hermann, M.D.
105 Medical Arts Bldg.,
West
Topeka, Kansas

F. E. Waggoner, M.D.
St. Margaret's Hospital
Kansas City, Kansas

R. W. Menninger, M.D.
Menninger Foundation
Topeka, Kansas

J. O. Yulich, M.D.
84th USAF Dispensary
Spokane International Airport
Spokane, Washington

W. L. Rockwell, M.D.
K.U. Medical Center
Kansas City 12, Kansas

Maternal Mortality

This patient was a 30-year-old Para V gravida VII, who died in a community hospital in a moderate sized community. Death was attributed to "acute ventricular flutter of two minutes duration, electrolyte imbalance 30 hours, massive intra-abdominal hemorrhage from a left tubal pregnancy, complete cardiac standstill at surgery." There was no autopsy.

She had a right tubal pregnancy nine years previously with surgical removal of the tube. She had five other full term uneventful pregnancies.

The patient did not know she was pregnant and was admitted to hospital as an emergency in shock. History revealed that she had some acute pain in her lower abdomen and fainted immediately thereafter and was brought to the hospital. Admission examination showed no spotting or bleeding, the adnexa were negative, the uterus was normal in size, but there was a boggy mass in the cul-de-sac. Hemoglobin was 11 gms. and hematocrit 36 vol. per cent.

Sequence of Events

1. Blood pressure on admission was 70/50, pulse imperceptible, and the patient was clammy, displaying air hunger and extreme restlessness.

2. Five per cent glucose in distilled water was started I-V within the next hour.

3. Blood pressure dropped to 64/40.

4. Mepergan 25 mg. was given I-V.

5. Blood was started within five minutes after the I-V fluid with Ephedrine $\frac{3}{4}$ cc. given intramuscularly. Blood pressure came up 98/50.

6. Solu medrol 40 mg. was added to the I-V tubing. Shortly afterwards, the blood pressure fell to 54/0 and the blood was started in the other arm.

7. Two hours after her admission to the hospital, surgical prep was done, operative medication given and the patient taken to surgery.

8. Surgery was started four hours and 30 minutes after admission to the hospital.

9. On opening the abdomen, the left fallopian tube was found to be ruptured and bleeding and was clamped and removed. The abdomen was full of blood, but before any further surgery could be done, it was recognized that the patient had a cardiac arrest. A thoracotomy was performed and cardiac massage carried out for eight minutes. During this time the patient was intubated and the heart began to beat within a two-minute period, with normal respirations re-established and pulse in the peripheral vessels within about 20 minutes. Two units of blood were given during surgery for a total of eight units since admission.

10. In the next 24 hours, I-V fluids of 5 per cent glucose d/w were continued. Nembutal, phenobarbital, Dilantin sodium and sodium pentothal were given I-V to control continuous convulsions.

11. Calcium gluconate was also given I-V and the patient was digitalized and given oxygen.

12. In the early morning hours a tracheotomy was performed.

13. By the afternoon of the next day, the patient had a regular heart rate of between 100 and 120, chest x-ray showed a good expansion of the lungs. The urinary output was 950 cc. during the 24 hour period following surgery, with an intake of 6500 cc. On four occasions, the specific gravity of the urine was over 1.040.

14. The blood count the day after surgery was 4,200,000 RBC, the hemoglobin was 13.8 gms, and a WBC of 10,600. The hematocrit was 41 Vol. per cent.

Committee Opinion: Attention was called to an article in J.A.M.A., June 18, 1960, on cardiac arrest due to hemorrhage and transfusions. It was noted that serum potassium concentrates rise progressively during the storage of blood, and also that hemorrhage and hypotension cause release of potassium from the liver, increasing the susceptibility to cardiac arrest. The giving of large amount of cold blood rapidly also contributes to this condition. It was felt that pressure elevating drugs such as Vasoxyl, Aramine or Levophed should have been given and that Mepergan, itself a hypotensive drug and one likely to set up cardiac arrest, should not have been given. Spinal anesthesia should not have been used in the face of hemorrhagic shock. Special emphasis was given to the performance of cul-de-sac punctures as the quickest, most accurate method for diagnosis of the ectopic pregnancies. Withdrawal of blood which does not clot is certain diagnosis of ruptured ectopic pregnancy. This can be done quickly and the time required before surgery can be greatly reduced.

Classification: Maternal death, obstetric, preventable.

KANSAS STATE BOARD OF HEALTH

TOPEKA, KANSAS

Division of Preventable Diseases—Division of Vital Statistics—Kansas Morbidity Incidence

Summary of Cases Reported in October, 1962 and 1961

And Cumulative Totals for the First Ten Months of 1962 and 1961

<i>Disease</i>	<i>October</i>			<i>January to October Inclusive</i>		
	1962	1961	<i>5-Year Median 1957-1961</i>	1962	1961	<i>5-Year Median 1957-1961</i>
Amebiasis	6	1	2	44	35	35
Aseptic meningitis	3	1	*	33	9	*
Brucellosis	1	4	4	14	43	58
Cancer	555	506	508	3,604	3,553	4,312
Diphtheria	—	—	—	—	—	2
Encephalitis, infectious	3	5	5	22	25	35
Gonorrhea	234	262	193	1,951	2,373	1,780
Hepatitis, infectious	15	25	8	394	641	240
Meningococcal, meningitis	1	1	1	13	13	13
Pertussis	—	2	9	37	21	61
Poliomyelitis	—	1	4	—	8	29
Rheumatic fever	2	—	—	10	4	3
Salmonellosis	260	24	*	300	66	*
Scarlet fever	20	31	21	435	886	493
Shigellosis	3	25	1	52	127	18
Streptococcal infections	84	125	9	1,065	1,148	422
Syphilis	106	104	109	990	1,053	1,157
Tinea capitis	20	14	14	120	106	174
Tuberculosis	14	14	29	224	239	316
Tularemia	1	3	1	9	13	25
Typhoid fever	—	1	—	—	3	4

* Statistics on 5-Year Median not available.

VALID INTERNATIONAL CERTIFICATES
OF VACCINATION

Quarantine authorities at United States ports of entry are becoming more stringent in calling for arriving persons, including United States citizens, to have a valid International Certificate of Vaccination or Revaccination against Smallpox. To be valid the certificate must be completed in detail, including:

Name of the person vaccinated or revaccinated

His signature (if child, written in by parent or guardian)

Sex

Date of birth

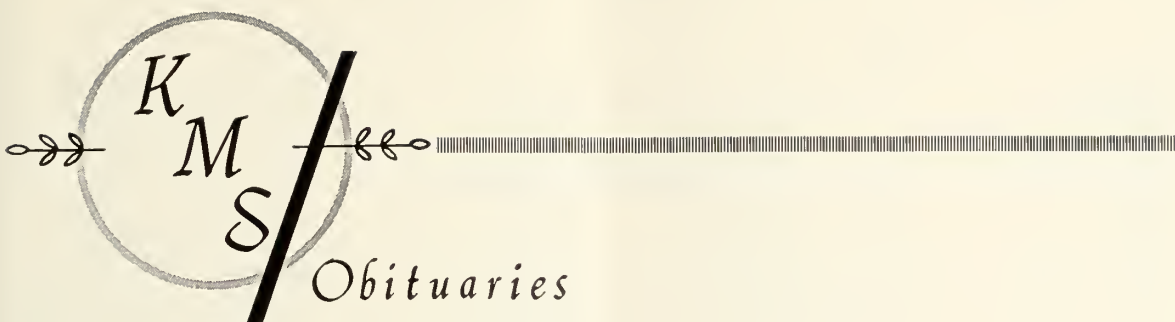
Date of the vaccination or revaccination

Record of either: primary vaccination, read as successful, or revaccination

Written signature of the vaccinating physician (required even though the vaccination may be carried out by a nurse or medical technician)

The "approved stamp" for authentication (*most* of the defective certificates seen recently have been lacking in this item).

Complete details are also necessary when the International Certificate of Vaccination or Revaccination against Cholera is needed for international travel. Coded official stamps for international travel have been provided for all countries with full-time health departments. From: Acting Chief, Division of Foreign Quarantine, Dept. Health, Education, and Welfare.



HOWARD G. MARKHAM, M.D.

Howard C. Markham, 84, Parsons, died December 26, 1962, in the Labette County Medical Center at Parsons.

Born in 1878 at Bardolph, Illinois, Dr. Markham received his degree in medicine from the Kansas Medical College, Topeka, in 1905. He was in medical practice in Parsons for more than 40 years and had served on the Parsons board of education.

Dr. Markham is survived by a son and two daughters.

GEORGE W. MORGAN, M.D.

George W. Morgan, 94, physician in Savonburg for many years, died December 18, 1962, in the Neosho Memorial hospital at Chanute.

He was born in Iroquois County, Illinois, in 1869, and moved to Neosho County, Kansas, with his parents when a young child. He attended the Ensworth Medical College at St. Joseph, Missouri, and graduated from there in 1894. Before going to Savonburg in 1917, he practiced medicine in Kimbal and Fredonia.

WILLIAM A. PARRISH, M.D.

William A. Parrish, 74, long-time physician in Mulberry and Pittsburg, died December 2, 1962, at Mt. Carmel hospital, Pittsburg.

Born August 22, 1888, in Curanville, Dr. Parrish attended medical college at the University of Tennessee, receiving his medical degree in 1913. After practicing medicine in Arkansas for a year, he moved to Mulberry where he practiced until 1937, when he moved to Pittsburg. He continued his practice in Pittsburg until his retirement.

Survivors include his wife, a son and a daughter.

GUILFORD G. GREENLEE, M.D.

Guilford G. Greenlee of Chapman died in his home on January 8, at the age of 83 years.

He was born in Iowa on June 6, 1880, and received his education in Iowa. He graduated from Kansas City Medical College in 1905 and in 1906 came to Chapman to begin his practice. Although he never retired, he limited his practice in later years.

Dr. Greenlee is survived by four sons and two daughters.

The Kansas Medical Society—1962-1963

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A.M.A. Delegate.....	Lucien R. Pyle, Topeka
A.M.A. Alternate.....	W. J. Reals, Wichita
A.M.A. Alternate.....	Glenn R. Peters, Kansas City
Chairman of Editorial Board..	Orville R. Clark, Topeka

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District 17.....	John O. Austin, Garden City

OFFICERS OF COMPONENT SOCIETIES—1963

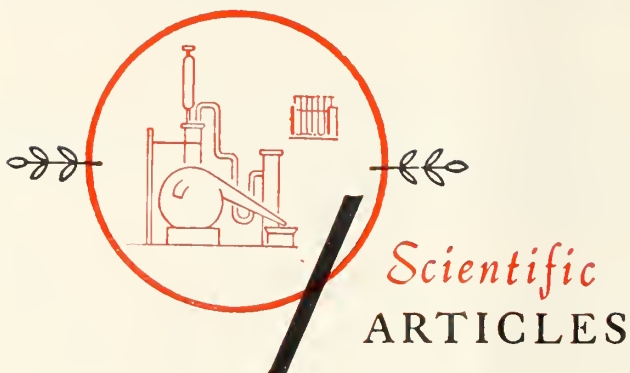
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Dickinson.....	D. C. Chaffee, Abilene	D. C. Rorabaugh, Abilene
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Douglas.....	George R. Learned, Lawrence	P. A. Godwin, Lawrence
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Finney.....	G. R. Hastings, Garden City	H. M. Wiley, Garden City
Flint Hills.....	Richard F. Conard, Emporia	Donald Coldsmith, Emporia
Ford.....	Evan R. Williams, Dodge City	Robert G. Klein, Dodge City
Franklin.....	Louis N. Speer, Ottawa	R. S. Roberts, Ottawa
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Harvey.....	Lee S. Fent, Newton	Charles A. Isaac, Newton
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Johnson.....	Dan L. Berger, Shawnee Mission	D. E. McIntosh, Parsons
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Marshall.....	R. M. Thomas, Marysville	R. C. Stanley, Paola
Miami.....	M. L. Masterson, Paola	C. A. Nystrom, Cawker City
Mitchell.....	R. P. Weltmer, Beloit	John F. Coyle, Coffeyville
Montgomery.....	C. R. Dickinson, Coffeyville	T. A. Montgomery, Sabetha
Nemaha.....	C. C. Hunnicutt, Sabetha	Henry K. Baker, Chanute
Neosho.....	James D. Gough, Chanute	Asher W. Dahl, Colby
Northwest Kansas.....	S. Paul Hornung, Colby	J. E. Henshall, Osborne
Osborne.....	I. F. Cornely, Osborne	S. T. Coughlin, Larned
Pawnee.....	William R. Brenner, Larned	Fred E. Brown, St. Marys
Pottawatomie.....	Eugene A. Walsh, Onaga	William E. Moore, Kingman
Pratt-Kingman.....	Cyril V. Black, Pratt	M. J. Borra, Hutchinson
Reno.....	Tom W. Stivers, Hutchinson	E. J. Chaney, Belleville
Republic.....	P. U. Hunsley, Belleville	P. E. Beauchamp, Sterling
Rice.....	James T. Grimes, Lyons	R. D. Olney, Manhattan
Riley.....	T. H. White, Manhattan	Elden V. Miller, Salina
Saline.....	Frederick A. Gans, Salina	Jack G. Phipps, Wichita
Sedgwick.....	George F. Gsell, Wichita	Jess W. Koons, Liberal
Seward.....	Otto F. Prochazka, Liberal	C. M. Lessenden, Topeka
Shawnee.....	John E. Crary, Topeka	V. E. Watts, Smith Center
Smith.....	D. A. Hardman, Smith Center	Ward M. Cole, Wellington
South Central Tri-County.....	M. D. Christensen, Kiowa	C. Everett Brown, Stafford
Stafford.....	O. W. Longwood, Stafford	L. L. Huntley, Washington
Washington.....	D. A. Bitzer, Washington	C. E. Stevenson, Neodesha
Wilson.....	Frank A. Moorhead, Neodesha	H. A. West, Yates Center
Woodson.....	A. C. Dingus, Yates Center	W. P. Williamson, Kansas City
Wyandotte.....	James G. Lee, Kansas City	

Special KUMC Issue

Following a tradition now 17 years old, the JOURNAL presents with pride this KUMC issue. We believe that as they read it, Society members will be impressed and pleased by the innovations which have been instituted at our Medical School. There are new plans and methods for teaching, and many fields in which instruction is offered. These and other interesting facts about the Medical School are presented here for your pleasure.

We are most fortunate to have an excellent spirit of cooperation between KMS and KUMC. The annual KUMC issue is evidence of this spirit.

Special appreciation is due Dr. Jesse D. Rising at the Medical Center, who has again made all arrangements for the assembling of the papers to be in this issue of the JOURNAL—a task which has involved hours and hours of work. Thank you, Dr. Rising, for a good job well done.
—Editor



Medical Education Today

The Medical Professions

C. ARDEN MILLER, M.D.,* *Kansas City, Kansas*

THIS YEAR 937 students are enrolled at the Medical Center. About half of them are studying to become physicians. Others will become nurses, dietitians, technologists, and therapists or diagnosticians in various specialized fields. These students learn to work closely with physicians, usually under their supervision. When the first year departments joined the medical school campus in Kansas City the graduate programs granting the M.A. and Ph.D. degrees expanded: about a hundred students are working toward these degrees. Such students will become teachers in medical schools, research workers in universities, government laboratories or industry; many of them will assist directly with the care of patients as audiologists, speech therapists, chemists, and pharmacologists. Actually the number of students studying at the Medical Center far exceeds the number who are officially enrolled for a degree or a certificate. Students preparing to be social workers, psychologists, and teachers of handicapped children take special courses or field placements at the Medical Center, even though these students are enrolled on another campus.

This hasty review of educational endeavors emphasizes several points of enormous importance to

medical services. Good medical care depends on a large number of health professions, not on just one. Even a minor ailment requiring a short visit to the doctor's office may invoke the services of a medical technologist, an x-ray technologist, and a nurse. The patients seen in a typical week may well require the

There are many students at KUMC in addition to those seeking a doctorate in medicine—all important in today's complex practice.

services of a dozen different professional workers: the call to the Poison Control Center for the advice of a pharmacologist on behalf of the child who swallowed a newly marketed insecticide; the visit of the welfare patient referred by a social worker; the retarded child who must have psychological testing; the hospitalized patient who must have a special diet. These are services not confined to the metropolitan medical center, but available to every doctor and his patients, if not in their own community, then in the next larger one close by. The public and the profession may at times lament the passing of a day when

* Dean of the University of Kansas School of Medicine.

the doctor carried in his head and in his black bag all the means for serving his patients. We may respect that day but not deplore its passing. Medical services are improved and they require the conscientious physician to share his responsibilities with many colleagues from associated professions. In this way he takes advantage of specialized skills and conserves his own time for the many more patients he cares for as compared with his counterpart thirty years ago.

The young physician must begin his work with a full-blown knowledge of the important contributions, and limitations, that other health professions can provide his patients. He must have full-blown skills in directing the work of other people with more narrowly refined skills than his own. He learns these things as a medical student working alongside other students in related fields.

The efforts of a medical school frequently are

measured by the number and preparation of the physicians who are graduated. This emphasis is justified but not complete. Where do a physician and his community find the nurse, the technologist, the therapist and the many other health workers required for comprehensive family practice as we know it today in Kansas? Many of these people, of increasing importance to medical services, are found among the graduates from the many courses of study provided by our medical school. The school serves the health needs of the state by educating its students in all ways that will provide skilled workers on behalf of good health. A plan has been developed for increasing the number of physicians graduated consistent with the population growth of the state. This is only part of the story. We will continue to carry a major responsibility for educating students in all the health professions.

THE KANSAS MEDICAL SOCIETY

Annual Meeting

April 29-May 1, 1963

Salina

Marymount College

Plan Now to Attend

School on Saturday?

A New Electives Program at Kansas University Medical Center

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IN HIS MORE paranoid moments the medical student may view medical school as a protracted test of his ability to avoid a cunningly devised series of faculty traps. On ward rounds he must be capable of physical sublimation, of instant transformation from a front and center solid when he knows the answer to a rear echelon vapor when he does not. He must be roundsman enough to know when to quote from his staff man's experimental work, and when to let discredited dogs lie. He must be sufficiently clairvoyant to perceive instantly when he is asked, "Come, come, Mr. Jones, what am I thinking?" The medical student must be alert. His paranoia is not altogether unjustifiable.

In a related vein the student must learn to contend with those faculty enforcers known as committees. Initially he must elude the Admissions Committee, annually the Promotions Committee, occasionally the Subcommittee on Student Affairs. But the real bane of his existence, the enemy by which he is besieged day in and day out for four years is the Education Committee. While not a stated goal of any of these committees, their apparent collective purpose is to accept the student as a freshman, and, in the words of Omar Khayyam,

"... shatter it to bits—and then
Remould it nearer to the Heart's Desire!"

The heart's desire of the Nation's medical school education committees has been a stereotyped curriculum usually characterized as lockstep. In this arrangement the students lock arms and march through identical courses with scant attention paid their individual needs. At Kansas, as elsewhere, the medical student has appeared to conform to these rigid curricula. More than likely, however, the student, in his wisdom, has always attempted to correct his recognizable personal deficiencies of information and to pursue his areas of special interest. It seems hardly fair that his honest attempts at improvement should have been impeded by his formal course of study.

The expanding body of medical knowledge, al-

ready too great to allow for treatment in four years of medical school, is forcing education committees to a decision which is at once inevitable and somewhat unpalatable. Either medical school must be lengthened or students must be turned out with planned gaps in their fund of knowledge. In the present climate, extending basic medical education is out of the question. In reality, then, there is no decision to be made, a situation not calculated to make matters simpler for education committees. Planning to expose medical students to all available areas of knowledge was difficult enough in itself. To plan omissions would appear impossible, and as a commit-

Implicit in the Electives Program is a statement that medical students are sufficiently knowledgeable and mature to assist in shaping their own learning experience. The validity of this belief is being tested in part, at least, by the current School Time Electives Program at the University of Kansas School of Medicine. Many of us are frankly excited by the potential in the electives concept.

tee function, it probably is. The only alternative is to place increasing responsibility on the medical student, himself, for sharing in the composition of his learning experience. The School Time Electives Program at the University of Kansas School of Medicine is an acknowledgement of this dilemma and an attempt at a partial solution.

In its report to Dean C. Arden Miller on August 31, 1961, the Education Committee proposed adoption of a plan declaring Saturday as School Time, during which time all medical students would be free of departmental, ward, and operating room responsibilities. The justification for this philosophy was stated in six points.

1. Under the existing system certain inter-departmental topics cannot be adequately presented without

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undue repetition. Examples: Preventive Medicine, Biostatistics, Endocrinology and Genetics.

2. Certain other subjects, not necessarily inter-departmental, have no logical place within specific clerkships. Examples: Radiology and Dermatology.

3. On occasion it is desirable to have all medical students available simultaneously. Example: A talk by a visiting luminary.

4. School Time will provide an opportunity for those integrative functions which experience has proved appropriate.

5. The Medical School extols to all applicants the virtues of a broad educational background. An attempt is overdue at exonerating this philosophy during the four years of medical school.

6. New developments and new discoveries should be injected into the curriculum as they occur. The student should not be made to suffer the lag inherent in the revising of textbooks and curricula.

The faculty approved the concept of School Time and a study group was assigned the task of formulating specific plans for Saturday mornings. The forthcoming recommendation with which this article concerns itself was that the two hours beginning at ten o'clock be set aside for a series of elective courses. The basic module for these electives was set arbitrarily at five weeks. A five-hour course, then, would occupy one hour for five weeks. A ten-hour course, if best presented by lecture, might be scheduled one hour a week for ten weeks, or if designed as a group discussion, two hours each Saturday for five weeks. No limit was imposed or suggested, however. A course could be offered every Saturday morning for the entire thirty-five weeks.

The basic plan devised, two key questions remained. Would a busy faculty volunteer to prepare and present elective courses, and would medical students voluntarily attend?

The program began operating on September 8, 1962, and has now extended through four of the possible seven five-week modules. Faculty offerings during the period have totalled 75 elective courses! Since many of these have run for more than one module, the student has had a choice of more than ten electives for *each* of the two hours for the twenty Saturdays to date. The elective courses offered were even more remarkable in their variety. A student might elect nothing on grounds of lack of material peculiar to his interests, but a glance at the list of titles suggests that he would have to be possessed of truly exotic tastes. If his interests run to the practical, there is *Your Office Laboratory*. If he seeks the esoteric, how about *The Myelin Sheath and Its Diseases*? If he prefers the basic, he may try *Gas Exchange and Energy Metabolism*. For the clinical interest there is *Minor Surgery*. If he desires relief from

the strictly medical, he may choose *The Changing Fabric of National Security*.

The number of electives offered served incidentally as a resounding refutation of the occasional student statement that the faculty is more interested in research and practice than in teaching undergraduate medical students. As an impressive commentary on the depth now attained by the Kansas faculty the list of titles is included in its entirety as *Appendix I*.

Would the student attend? He was informed that he might attend one, two, or none as he desired. If he chose not to attend, he had no obligation to the medical school during School Time. As a matter of fact, if he failed to visit the campus on Saturday morning, his absence would not be noted. The nature of the medical student's Friday evening has not changed appreciably over the years, and the risk was appreciated that he might succumb to the call of the siren, Simmons. The beginning of school and the novelty of the program were expected to produce an

TABLE I
STUDENTS ENROLLED IN ELECTIVES
BY PERCENTAGES
8 SEPT.-10 NOV. 1962

Class	N	8 Sept.-6	Oct. 13	Oct.-10	Nov.
		10 A.M.	11 A.M.	10 A.M.	11 A.M.
Freshman	115	83	59	83	83
Sophomore	101	94	92	97	81
Junior	104	84	93	91	86
Senior	83	100	59	82	42
House Staff					
Graduate	150	34	30	34	30
Average All					
Medical					
Students	403	90	76	88	66

Twelve per cent of senior class on rural preceptorship at all times.

early surge of enthusiasm. The response exceeded the most optimistic predictions. *Table I* represents initial student enrollment by classes. The total indicated that an average of 80 per cent of all medical students enrolled in at least one elective each Saturday. Allowing for novelty and early enthusiasm, the figure remained impressive.

The first faculty offerings were preponderantly clinical. Encouraged by the student response a decision was made at the end of the first ten weeks to appeal for additional electives suitable for students in the first and second years. The second invitation produced another remarkable response from the faculty. An undesired side effect of adding courses at

this point was the necessity of a complete re-enrollment. This re-enrollment was approached with considerable trepidation. The program was barely airborne, and must now be subjected to a period of inevitable confusion. On the other hand a certain unrelated benefit might result from the procedure. It was recognized that the initial enrollment figures did not accurately reflect attendance. How many students were actually taking advantage of the program after ten weeks? Re-enrollment should provide the answer since only the truly interested should bother to enroll again.

A decreased enrollment did occur as seen in *Table II*. The drop was not as great as anticipated. The planning groups originally decided that the program would be termed successful if 30 per cent of students participated. Following re-enrollment an average of

TABLE II
STUDENTS ENROLLED IN ELECTIVES
BY PERCENTAGES
17 NOV. 1962-2 FEB. 1963

Class	N	17 Nov.-15 Dec. 5 Jan.-2 Feb.			
		10 A.M.	11 A.M.	10 A.M.	11 A.M.
Freshman	115	70	66	64	58
Sophomore	101	82	79	81	69
Junior	104	32	44	45	42
Senior	83	64	61	65	61
House Staff					
Graduate	150	21	22	21	19
Average All					
Medical					
Students	403	62	63	64	58

62 per cent of all medical students were entered in at least one course each Saturday.

The lower level of participation by third year students is not yet understood. Several factors may be at play. Third year students have long complained that clerkship duties prevent them from reading as they would like. To believe that 55 per cent of the junior class is closeted with journals and textbooks each Saturday morning is, perhaps, unduly optimistic, although independent study undoubtedly affords a partial explanation. The possibility exists that in spite of all precautions a certain segment of students are involving themselves in clerkship activities during School Time. Greater participation by the traditionally relaxed fourth year students may reflect their better understanding of the large amount of educational material they will never encounter if they do not take advantage of the electives.

Attendance by interns, residents, and graduate stu-

dents deserves comment. Most departments attempt to free their house staff and graduate students on Saturday morning to allow maximal attendance. Some clinical departments utilize the Electives Program to allow their residents to keep abreast of the vital and booming developments in the basic medical sciences. Similarly, a number of graduate students are finding in the electives the opportunity to familiarize themselves with appropriate clinical techniques.

Many of the courses are open to and attended by faculty members. As a matter of amusing fact, on two occasions instructors have petitioned for rescheduling of their electives to allow their attendance at a colleague's course.

The present elective concept is new to the Kansas School of Medicine. The program has resulted from a growing faculty conviction that the educational needs of medical students are as individual as the students, themselves. The program embodies two essentials of the ideal learning situation; students attending because they are interested, and teachers voluntarily presenting their favorite subject material.

Acknowledgements

The School Time Electives concept was the product of many minds, and its being the result of many hands. The idea for the planting originated with the Education Committee consisting of Drs. Charles Brackett, John Carter, Mahlon Delp, Russell Mills and Lawrence Peters and their alternates, Drs. Jack Frenkel, William Ruth and Ed Walaszek. Dean C. Arden Miller served this group in a consultant capacity.

The successful experiments in hybridization were the work of an ad hoc committee, the School Time Study Group chaired by Dr. Kurt Reissmann and composed of Drs. John Chapman, Santiago Grisolia, Gerald Holman, John Kepes, Charles Lewis, and Paul Schloerb.

Particular credit is due Dr. Chapman for remaining around for the thankless chores of weeding and watering.

The faculty was magnificently generous in its broadcasting, and, of course, commendation is due the student body for having the good sense to reap the harvest.

APPENDIX I

TITLES AND SPONSORS OF ELECTIVE COURSES*

Potassium Metabolism and Acid-Base Changes	Brown, E. B.
Cardiac Auscultation	Dunn, M.
Management of Acute Cardio-pulmonary Failure	Frederickson, E.
The Unconscious Patient	Frederickson, E.

Geographical Pathology	Higginson, J.	The Myelin Sheath and Its Diseases	Poser, C.
Ophthalmology for the Non-Ophthalmologist	Lemoine, A.	The Arthritides	Rankin, T.
Metabolism of Nitrogenous Materials	Manning, R.	Selected Readings in Psychiatry	Rosenberg, S.
Care and Handling of Soft Tissue Injury	Robinson, D.	Clinical Pulmonary Function	Ruth, W.
Minor Surgery	Masters, F.	Clinical Pathologic Correlation in Neuropathology	Steedmann, A. T.
Athletic Injuries	Peltier, L.	Morphological Pathology of the Nervous System	Kepes, J.
Renal Pharmacology	Peters, L.	Transfusion Practices	Eilers, R.
Techniques in Emergency Surgery	Reed, W.	The Panorama of Growth Retardation	Holman, G.
Newer Concepts of Renal Function and Failure	Reissmann, K.	Action of Drugs on the Central Nervous System	Norton, S.
Gas Exchange and Energy Metabolism	Reissmann, K.	ENT Emergencies	Kirchner, F.
Normal and Abnormal Physiology of Red Blood Cells	Reissmann, K.	Medical Ethics Discussion Group	Agnew, L.
Basic Prescription Writing	Rising, J.	The Changing Fabric of National Security	Frenkel, J.
Fluid-Electrolyte Metabolism and Renal Failure	Schloerb, P.	Pediatric X-Ray Diagnosis	Germann, D.
Neurologic Examination Techniques	Steedmann, A. T.	Tracking Causes of Common Infectious Diseases	Wenner, H.
X-ray Film Interpretation Session	Tice, G.	High-Speed Computers in Medicine	Geertsma, R.
Neuropharmacology	Walaszek, E.	Lipid Metabolism and Its Clinical Disorders	Azarnoff, D.
Pharmacological Psychiatry	Chapman, J.	Psychology of Perception	Ruiz, R.
Progress in Hematology	Wilson, S.	The Psychological Development of the Child	Vigliano, A.
Radiobiology as Related to Diagnostic Procedures	Youngstrom, K.	Group Methods in Psychiatry	Ransmeier, R.
Artificial Respiration	Hustead, R.	Psychosomatic Therapy from Alexander to the Present	Rothrock, I.
Endocrine Seminar	Bolinger, R.	Psychotherapeutic Interviews	Gaitonde, M.
Biology of Neoplasms	Carter, J.	Biosynthesis of Heme	Walters, T.
Basic and Advanced Electrocardiography	Crockett, J.	Personality Theory	Moskowitz, A.
Radiation Injury and Civil Defense Considerations	Frenkel, J.	The Radiology of Bones and Joints	Davidson, K.
Advanced Surgical Gastrointestinal Physiology	Friesen, S.	Recent Advances in Reproductive Physiology	Greenwald, G.
Diagnostic Urology	Valk, W.	Recognition and Treatment of Disturbed Adolescent	Greaves, D.
Drugs and Hypertension; A Review	Leaders, F.	Clinical Physiology and Pathophysiology of GI Tract	Klotz, A.
What to Do Until the Psychiatrist Comes	Brauchi, A.	Physical Therapy for the General Practitioner	Rose, D.
Introduction to Genetics	Manning, R.	The MMPI in Medicine	Marks, P.
Biosyntheses and Metabolism of Steroid Hormones	Nicholas, H.	Intelligence and Learning in Children	Fish, J.
The Metabolism of Estrogenic Hormones	Nicholas, H.	Social Medicine	Hudson, R.
The Limping Child	Litton, L.	Principles of Operative Surgery	Zimmerman, J.
Renal Physiology	Sullivan, W.	Clinical Pediatric Cardiology	Diehl, A.
The Electroencephalogram	Poser, C.		
Neuroradiology	Poser, C.		

* In many instances several faculty members took part in a given course. For purposes of brevity only one is listed.

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Administrator or Nurse?

Concepts of Nursing and Nursing Education

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TWO DISTINCT and divergent concepts of professional nursing exist. These have grown out of the confusion concerning the function and responsibility of the professional nurse in the social order in which she functions. Health practices have been revolutionized. During the last two decades medical practice has moved from the home to the hospital, the clinic, or the office. The general practitioner of yesterday has become the specialist of today. Hospitals have grown rapidly in number and in size. As scientific knowledge has increased, responsibility for many highly technical treatments and complex medications has been delegated to the graduate nurse. The increasing utilization of the hospital in conjunction with the increasing complexity of medical care has multiplied the number of professional and auxiliary services of the modern hospital. If the patient is to receive these services, someone must be responsible for the coordination and recording; someone must write requisitions and check data. These tasks have been added gradually to the one person always present: the graduate nurse. The result has been a decrease in the time spent by the professional nurse in giving direct care to patients with a corresponding increase in those functions which may be carried *out in behalf of the patient* or directly related to hospital management.

Some nurses and employers of nurses are firmly convinced that the future professional nurse will have largely supervisory and managerial responsibilities with direct patient care delegated to other less well-prepared members of the nursing team. The proponents of this philosophy see the nurse functioning largely apart from the patient with major responsibility for implementing hospital policies and routines, for delegation and supervision of activities related to patient care and for carrying out medical orders for treatments and medications.

The rewards of status and salary offered by employing service agencies have been given largely for proficiency in management rather than for growing understanding and skill in giving patient care. Promotion policies have resulted in further separation from direct service to individuals in need of care.

Schools of nursing which accept this philosophy

implement it in procedure-centered teaching with the emphasis on management skills needed to fulfill administrative functions. Assignments for student learning are task-oriented rather than patient-centered and the student learns to give medicines and carry out treatments for all patients on a unit rather than to give total care to a group of patients. This results in a segmented service to patients with multiple personnel providing fragments of the total care. On graduation the nurse may consider direct patient care as the responsibility of the aide or practical nurse. Research shows that graduates so prepared see themselves as assistants to the doctors and the hospital administrators, but seldom as "agents of the patient."

On the other hand, some nurses are fully convinced

The nurse today spends increasing time managing personnel and administrative details. This is reflected in the philosophies of some schools in which the emphasis is on task-oriented function. Other schools seek to prepare the nurse for more patient-centered activity, the managerial and administrative functions following and being dependent upon this preparation.

that an increasing amount of *direct patient care* can and must be given by the professional nurse herself. This concept of a professional nursing role seems in harmony with the concept of other professions in which the practitioner-client relationship is paramount and offers the challenge of personal growth and professional satisfactions which the management role lacks. A commitment to this philosophy by a school does not preclude educational preparation for management. The focus of the curriculum of The Department of Nursing Education is on:

1. An understanding of the rationale of professional nursing practice based on scientific principles and the ability to act appropriately in relation to needs of patients and families.
2. The ability to think critically and analytically and be able to move from specific to generalities.

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3. A role conception which permits her to enter into a team relationship with peers and to give considerate leadership to various levels of personnel whom she directs.

4. Skill in therapeutic use of self in verbal and non-verbal communications.

5. Beginning skills in teaching patients and workers.

6. Those essential attitudes and habits of study consistent with the continued growth of a professional person.

7. Knowledge of contemporary society and willingness to become involved in professional and community endeavors.

Management then becomes a tool for effecting a smooth flow of medical and nursing services to patients. The nurse who functions in this kind of a role must have a broad understanding of biological, physical and behavioral sciences.

Students spend the major portion of the school week throughout the curriculum in direct service to patients. Faculty guidance enables the students to develop skill in giving direct nursing care and time is available for depth of learning. Students are expected to prepare for practice in giving care as thoroughly as for class. Goals for patient care and nursing approaches for achievement of them are developed in detail as a guide for nursing action. Students are expected to read widely and to consult with the physician and other members of the health team concerning aspects of care. Intelligent observation, evaluation and reporting of signs and symptoms of disease conditions or of response to medical care and treatment is a valuable contribution to medical practice. Discriminative judgment must be developed in evaluating observations and accuracy is demanded in reporting or recording. While discriminating judgment cannot be taught, through guided practice in situations it can be developed.

Although many doctors continue to assume the responsibility for teaching patients health care, as the ratio of patients to doctors continues to increase, this is an area in which the well-prepared professional nurse should offer assistance. Believing that the professional nurse must assume increasing responsibility for teaching patients and families health and sickness care, study of both educational psychology and methodology of teaching are required. When teaching involves implementation of medical care, students consult with the doctor to insure that instruction given is coordinated with the doctor's plan for care and in keeping with his desire for patient teaching. Under supervision of the instructor, accuracy and appropriateness of the student's teaching is assured.

Management skills on a beginning level of team leadership are introduced in the senior year of the

curriculum with emphasis retained on patient-centered care. Teaching and supervising other members of the nursing team is a responsibility of the professional nurse and is essential to the modern nursing service. Therefore, senior students have this practice under supervision.

Graduates of this program see themselves primarily as "agents of the patient" in giving direct patient care, as co-workers with the doctor in developing comprehensive plans for patient and family care, and as giving leadership to non-professional personnel engaged in patient care.

In summary, the nursing faculty of the Department of Nursing is committed to the concept that every effort must be given to increasing the amount and quality of nursing given to patients by *professional* nurses and for collaborating with others in providing an increasingly effective and economic administration of nursing services.

References

1. American Medical Association. "Objectives and Program of AMA Committee on Nursing," *Journal of the American Medical Association*, Vol. 181, Page 430.
2. Bratton, Jimmie K. "Definition of Comprehensive Nursing Care," *Nursing Outlook*, August, 1961, p. 481.
3. Ingles, Thelma. "Understanding the Nurse-Patient Relationship," *Nursing Outlook*, November, 1961, p. 698.
4. Johnson, Dorothy E. "Patterns in Professional Nursing Education," *Nursing Outlook*, October, 1961, p. 627.
5. Ibid. "Significance of Nursing Care," *American Journal of Nursing*, November, 1961, p. 63.
6. Lambertson, Eleanor. "The Need for Leadership in Nursing," *NYSLN Bulletin* No. 2, 1961, p. 32.
7. Nahm, Helen, and Miller, Doris. "Relationships Between Medical and Nursing Education," *Journal of Medical Education*, 36:849, August, 1961.
8. Newton, Mildred. "What's Ahead for Nursing and NLN?" *Nursing Outlook*, October, 1961, p. 600.
9. Simmons, Leo. "What Is the Potential Role of the Nurse in Patient Care?" *Nursing Outlook*, February, 1962, p. 103.
10. Smith, et al. "Some Reactions (to Significance of Nursing Care)," *American Journal of Nursing*, December, 1961, page 96.
11. Whitaker, Judith. "Changing Role of the Professional Nurse in the Hospital," *American Journal of Nursing*, February, 1962, page 65.

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Teaching Physiology-1963

New Instrumentation in Physiology Teaching at K. U. Medical Center

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THE RAPID ADVANCES in clinical medicine since World War II have been matched by those in the basic medical sciences, including physiology. Certainly much of the progress has been due to the development of new instrumentation which permits faster and more detailed observations, often of variables which were previously difficult or impossible to measure. For obvious financial reasons, the "new" physiology possible with modern instruments has been slower in finding its way into student laboratories than into research laboratories. However, the transfer of the first-year medical sciences to the Medical Center in Kansas City provided an ideal opportunity for many transitions. Along with a new class came a new building, a nearly new departmental staff and almost entirely new equipment. The physicians of the state may be interested to know just how this has affected the teaching of physiology.

The department staff, including Dr. E. B. Brown, Jr., Chairman, Dr. G. N. Loofbourrow, Dr. L. P. Sullivan, and the author, have extensive contact with the students during their entire freshman year. About 45 per cent of the time in the first five months is devoted to physiology, an equal amount to biochemistry and the remainder to histology. Starting in January, the students continue their contact with physiology through an integrated course in neuroanatomy and neurophysiology and an intensive two-week course in endocrinology. During much of the year, each student spends a full day each week in the physiology laboratory, where the staff feels that much of its most important teaching is done. Additional time is spent the following day analyzing the results with the students.

The department attempts to provide personalized instruction by having all faculty members, post-doctoral fellows and graduate students teach in the laboratories, by having only half the class in laboratory each day, the other half being in biochemistry, and by dividing the students into four laboratories. Thus the 12 to 16 students in a laboratory have at least one instructor working with them at all times.

The medical student of yesteryear, who was searching for the physiology laboratory would probably not recognize it now for most of his familiar landmarks have been replaced.

What do the students do? Physicians who cut their physiological teeth on a smoked drum kymograph might be surprised that this year's students have not yet seen one. Its functions and many others are taken over by a four-channel ink-writing recorder (*Figure 1*) costing about \$3,000. From left to right, the five panels at the top of the instrument are the power control panel, electrocardiogram, two chopper amplifiers for use with transducers, and a servo amplifier. Illustrated is a typical recording of a blood pressure experiment done by the students on dogs in which the recordings from bottom to top are as follows: Electrocardiogram, arterial pressure baseline, arterial blood pressure recorded directly from the carotid artery by a Statham high-pressure transducer, a time marker set for two second intervals, venous pressure baseline, central venous pressure recorded from the superior vena cava by a Statham low-pressure transducer, and an event marker. In addition to

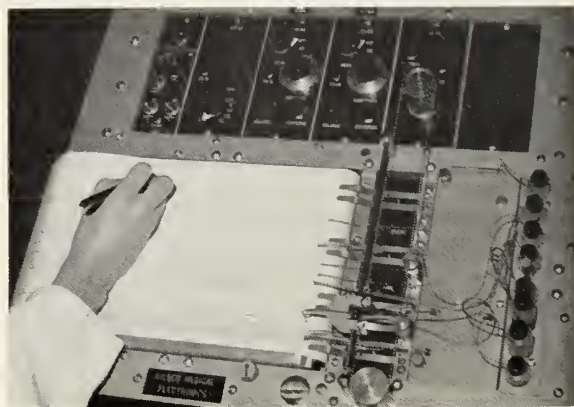


Figure 1. The Gilson Medical Electronics four-channel recorder, basic to many experiments.

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Figure 2. The Statham force transducer as set up to determine tension in frog skeletal muscle. The thread from the transducer (top) connects to the muscle which is also rigged for electrical stimulation.

its use for measuring fluid pressures in the body, the low pressure transducer, which is sensitive for pressures from zero to 50 mm Hg, is used in the laboratory to record intrathoracic pressures directly from a trocar inserted through the intercostal space during a respiration experiment and to record intraluminal pressure in the rabbit uterus using a balloon. The tracing shown illustrates particularly well the advantages of the current equipment. Simultaneous measurements have permitted correlations which the students could not possibly have made otherwise, concerning the effects of auricular and ventricular fibrillation, for example. Another advantage is the greater transient response. Because of the great inertia of the standard levers and mercury manometers used in kymograph recordings only mean blood pressures could be recorded. With the present instrument pulse pressures and pulse contours are shown clearly.

Even the frog gastrocnemius muscle experiment, on which many budding physicians previously spent so much time, has changed. Figure 2 illustrates the Statham force transducer which is now used to re-

cord, not the length changes, but rather the tension changes in the stimulated muscle under various conditions. The relative ease of operating the transducer and recorder has permitted us to cut the skeletal muscle experiments to half of one day's laboratory. In addition, the misleading "latent period" caused by the inertia of muscle levers is eliminated. The force transducer is also used to study the heart, using the turtle, and intestinal smooth muscle, using the rabbit.

The servo channel is used in a new experiment in which the cardiac output of a dog is measured by the dye dilution method. In Figure 3, the students, having already calibrated the servo channel at different dye concentrations, are about to inject cardio-green dye into a right atrial catheter while the student on the right draws blood from an aortic arch catheter through the dye photocell-cuvette in his hand. In the foreground is the special dye recorder needed to convert the photocell readings to a continuous plot of dye concentration on the 4-channel recorder. In the background and above the dye cuvette are the blood pressure transducers previously mentioned. In addition to illustrating a method of increasing clinical importance, this experiment emphasizes some of the considerations

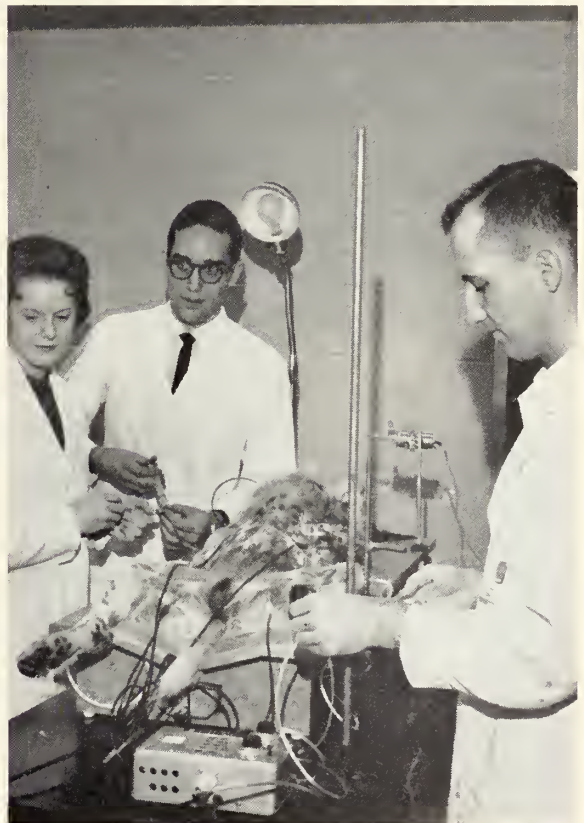


Figure 3. Mary Lou Bitner from Kansas City, Charles Haen from Wichita and John Falletta from Arma determine cardiac output.



Figure 4. Christopher Morgan from Emporia, James Scholten and John Mitchell, both from Salina, analyze respiratory gases on the oxygen analyzer (foreground) and CO₂ analyzer.

involved in the rate and extent of distribution of materials and their effects on plasma concentration.

Later in the course, the students use other instruments besides the recorder and its accessories. Figure 4 illustrates students at work in an experiment on respiratory gases using the Pauling oxygen analyzer and the Harvard CO₂ analyzer. The Pauling analyzer makes use of the paramagnetic properties of oxygen while the Harvard analyzer measures the drop in pressure of gas flowing through an orifice when the CO₂ is being absorbed on the distal side. These instruments, which are extremely simple to use and permit rapid analysis, replace methods which were either too difficult or too inaccurate for satisfactory student use. Among other experiments, the students determine respiratory dead space and functional residual capacity using these devices.

Experiments on kidney function and gastroin-

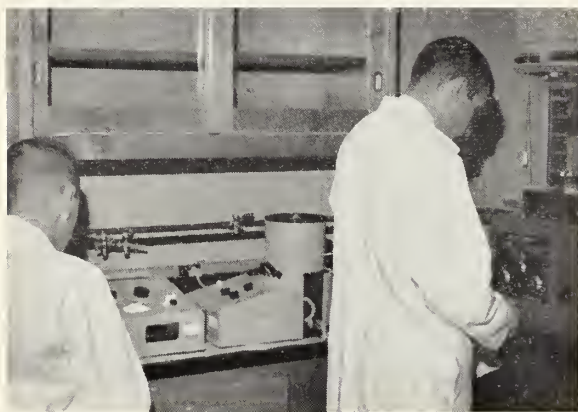


Figure 5. Duane Fredrickson, Osage City, determines sodium on the Coleman flame photometer (left) while Robert Kipfer works at the Fiske osmometer.

testinal function rely heavily on the Coleman flame photometer and Fiske osmometer shown in Figure 5. Although the students do not usually operate the osmometer themselves, they become conversant with its applications in experiments on human kidney function under various experimental conditions, on renal countercurrent mechanisms in the dog and on salt absorption in the dog small intestine. The students determine sodium on the flame photometer in the same experiments.

In the neurophysiology section of the course, the

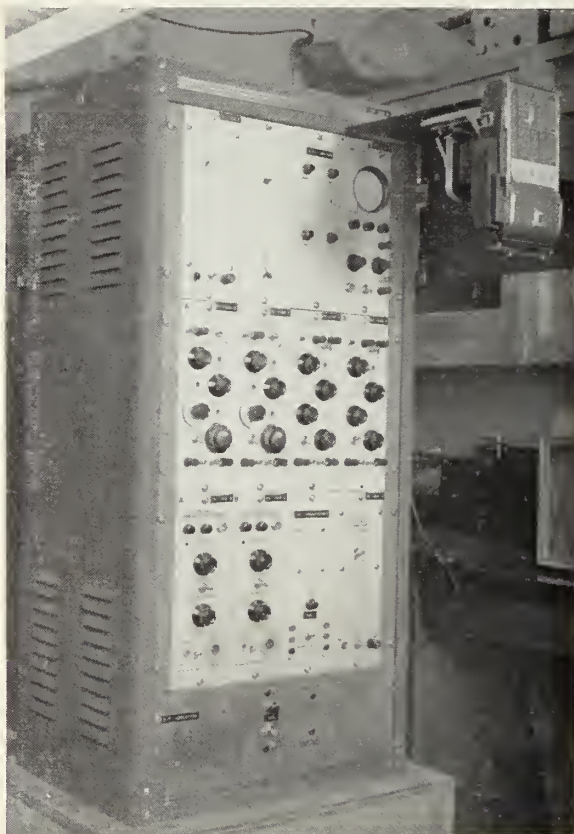


Figure 6. The neurophysiological unit. Described in text.

students will make extensive use of what is staidly known as the "Neurophysiological Unit" (Figure 6). The students will think of more colorful terms. In the upper right corner is the oscilloscope, on which all results are displayed. Also shown is a Polaroid Land camera, which is used to make permanent records by photographing the oscilloscope screen. The remainder of the Unit contains the necessary modules, all from Tektronix, Inc., to provide electrical stimuli, variable in strength and duration, and to record electrical potentials simultaneously from two different sources. Since electrical activity is associated with every body

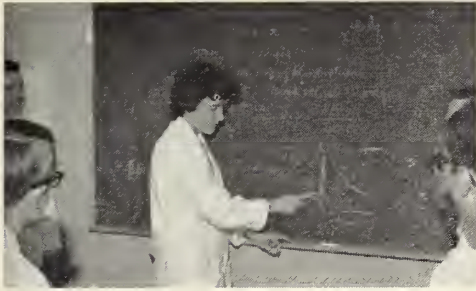


Figure 7. Dr. Virginia Tucker discusses the measurement of body water distribution with her students. Dr. Tucker, a pediatrician, is one of the three post-doctoral fellows currently working in the department.

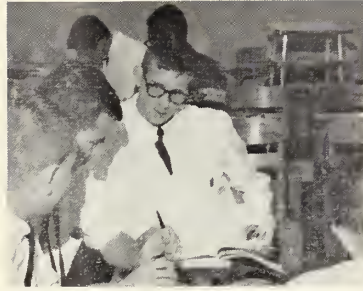


Figure 8. A typical cluster of students working over the day's results. From left to right are Larry Heck from Lawrence, Phillip Ballard from Wichita and Charles Hartman from Kansas City.



Figure 9. Dr. E. B. Brown, Jr., department chairman, explains an observation to Leslie Nesmith from Lawrence and Peter Perine from Topeka.

function, the possibilities of such a unit are numerous. Experiments will include, among others, studies on action potentials in isolated frog sciatic nerves, electromyography, the observation of effects of stimulating the exposed motor cortex, and measurement of the cortical potentials induced by peripheral stimuli such as light and sound.

In the face of rather drastic changes in equipment and experiments, one might ask whether the learning of the students is really improved. The department is fully aware that the most important components in any laboratory are the student and the teacher. But given these two components, much more teaching can be done with the right equipment. The staff has followed two guiding principles—first, that the equipment should be comparable to that students might expect to use or see in the future and, second, that the manipulation of equipment should not become the main point of the experiment. The faculty does not attempt to teach the details of the instrumentation involved, but by operating modern equipment, the

students gain some experience with techniques of clinical importance and some appreciation of current research. Although it may appear elaborate, the equipment is easier to set up and permits many more observations to be made more accurately in the time available. Therefore, it has a greater teaching function.

Figures 7 through 9 illustrate the culmination of laboratory activity, the analysis of the results. Emphasis is on quantitation of the results, wherever possible (*Figure 7*). In one of the first experiments, on the contraction of glycerated muscle fibers, the students do some simple statistical analysis. This is primarily to emphasize the necessity for distinguishing between random variations in a given "normal" population and those variations which are actually significant in terms of representing a different or "abnormal" population. Thus the students begin their life-long job of making the abnormal normal, the pathological physiological, the sick well.

KANSAS BASIC SCIENCE BOARD EXAMINATION

The Kansas Board of Basic Science Examiners will give examinations in the subjects of anatomy, bacteriology, chemistry, pathology and physiology on June 7-8, 1963, at the University of Kansas Medical Center, Kansas City, Kansas. Satisfactorily completed applications for examination should be submitted at least 30 days prior to date of examination. Application blanks and other information can be obtained from Dr. L. C. Heckert, Secretary, Kansas Board of Basic Science Examiners, Pittsburg, Kansas.

Clinical Psychiatric Training

Psychiatric Clinical Clerkship at the University of Kansas Medical Center

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IN THE ACADEMIC year 1961-62 the third year medical students were divided into four groups of 15 to 20 each. Each group was rotated for a period of approximately nine weeks through the clinical clerkship on the following services: medicine, surgery, pediatrics and psychiatry. Therefore, the first group of clinical clerks on the psychiatric service had no experience in clinical work whereas the last group had clinical experience in medicine, surgery and pediatrics. As a result, it will be seen that each group came with varying degrees of knowledge with regard to clinical work with its accompanying bias and prejudice. The program in the psychiatric clinical clerkship passed through several changes during the course of the year and its format for the last group is described below.

At first there was a general orientation to the clerkship during which a senior staff member highlighted to the students the things which they should keep in mind when working with psychiatric patients. The students were shown films on psychiatric interviews. The students also participated in the psychological tests that have been given to the medical students by the psychology department for some time for research purpose. The experience of the students was divided into two parts: (1) Didactic training and (2) Clinical work.

Didactic Training

The students were divided into small groups, the number varying from four to eight. Twice a week each group met with the same group leader for one and a half hours. The entire group was assigned to read a particular subject from any of the standard textbooks in psychiatry. From time to time important articles on that particular subject were also assigned for reading. The group, when it met with the leader, discussed this particular subject and critically exchanged thoughts and ideas pertaining to the subject. These discussions were lively and thought-pro-

In the groups that passed through the psychiatric clerkship during the year it was found that it took approximately two weeks before the students were able to cope with their initial anxieties. There was temporarily a period of confusion and frustration at not being able to do things the way they had been accustomed to doing on the previous services. The students were looking for concrete directions as to what to say to the patient when he made a particular statement and were at a loss with regard to conducting a psychiatric interview. Near the end of the third week they were able to appreciate that the uncertainties and the anxieties they experienced in the beginning were inherent in the situation.

The students were greatly appreciative of the understanding, firm and friendly approach used by the faculty. Toward the end of their stay on the psychiatric service they were supplied with a questionnaire designed to evaluate their experience on the clerkship and were assured that their answers would in no way interfere with the grades and that signing of the questionnaire was optional. A review of this material indicates that a majority of the students considered their experience on the psychiatric service to be a meaningful one.

voking. The group leader participated in the discussions in varying intensity depending on his own personality, the topic under discussion and the needs of the group. By the end of the course, the group had acquired a working knowledge of the following syndromes: psychoneurosis and its subvarieties, schizophrenic reactions, affective reactions with emphasis on depression, acute and chronic brain syndromes, al-

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coholism, personality disorders, psychophysiologic reactions and rudimentary knowledge about psychotherapy.

The students also had opportunity to hear leading workers in the field of psychiatry and related areas when they visited the department; however, their presentations were mainly for the benefit of the faculty.

Clinical Work

Clinical experience was offered both on inpatients and outpatients. Half the group worked in the outpatient clinic in the morning and were assigned to the inpatient service in the afternoon, the other half worked on the inpatient service in the morning, and worked in outpatient clinic in the afternoon. Four students were assigned to the Division of Child Psychiatry for their inpatient work and the remainder worked on the acute treatment psychiatric service at the Veterans Administration Hospital in Kansas City, Missouri, for their inpatient work. All the students were assigned for outpatient work in the outpatient clinic of the psychiatric department of the K. U. Medical Center.

On the inpatient service each student had approximately four to six patients at any one time; some of these were new admissions while others had been in the hospital for varying lengths of time. The student conducted the physical examination on the patient, wrote an admission note, elicited social history on the patient through a series of interviews with the patient and with his family, presented the patient at weekly conference, wrote a conference note after the staffing and also wrote a discharge or transfer note as the case might be. Although the students worked directly with the patient and his family, every aspect of his work was closely supervised by a corresponding staff member in his specialty: the ward physician, social worker, psychologist and the individual supervisor who helped the student in the interview techniques and also in organizing the psychiatric case summary. The student was also instructed to read the 24-hour nursing reports on the patient assigned to his care and to become familiar with all the remaining members of the therapeutic team, for example: the nurse, the occupational therapist, the recreational therapist, the industrial therapist, etc.

In the outpatient clinic the student worked in much the same manner; that is, he had an individual supervisor and the director of the outpatient clinic had the over-all administrative responsibility. Television was used a great deal as a medium of instruction in the outpatient clinic. The student also had opportunity to sit in on the seminars with the visiting consultants in the outpatient clinic.

Discussion

Didactic Training: Because of the small group of students there was a brisk exchange of views and ample opportunity for each student to participate in the group discussions. It was not possible for any student to remain silent since in such situations the group leader invited his participation. The discussions provided a feedback to the group leader who was thus able to determine whether the concepts with regard to a particular subject had become meaningful to the student. It provided an opportunity to the student to express a viewpoint since a difference of opinion was not only accepted but actively encouraged by the leader.

These seminars permitted the student to bring into the discussion some personal experiences which related to the concepts that were being discussed, bringing into focus the comprehensiveness of psychiatric topics which are so closely linked with an individual's experience in life. The student became familiar with some of the workers in the field since it was frequently the case that the student studied from different textbooks and articles. By the end of the clinical clerkship major topics in psychiatry were covered; however, though the basic facts under each syndrome were tackled, it was not the purpose of these discussion groups to acquaint the student with all the syndromes in psychiatry, nor to cover all the facts in each of the syndromes. The faculty spent almost three to four times as much time in this aspect of the training of the student as would have been necessary if the didactic training had been given through lectures.

Clinical Work: Since the student worked directly with the patient in the clinical work, he experienced in varying degrees anxieties that generate in a psychiatric interview not only on the part of the patient but also on the part of the examiner. He realized that talking and listening to a patient was an art requiring both training and experience. He appreciated that in the modern concept of the treatment of the psychiatrically ill patient it is necessary to work with nurses, social workers, psychologists, occupational therapists, recreational therapists, clergymen, etc. He, therefore, appreciated the change from a vertical to a more horizontal type of organization of those who care for the sick. The more traditional vertical relationship of the physician issuing orders to the nurses, who in turn minister to the sick, was replaced by the understanding of the significance of the therapeutic instrumentality of each and every person who in some way or other took part in the study, care and treatment of the sick. The student learned that a symptom is a means of communication between the patient and his doctor and that one under-

stood a patient a great deal better as a human being when the doctor did not stay with the symptom, but used it as a means of obtaining a better appreciation of the patient as a person. The student also became aware that a symptom, distressing though it might be for the patient, was also a means of handling some of the psychological tensions which the patient experienced. The emphasis, therefore, was not only on what the patient did with the symptom, but also what the symptom did for the patient.

The student in his contact with the patient became aware of feelings of a positive and negative nature that emerged in the interview situation both on his part and that of the patient. Very often it happened that the student was puzzled how, in talking with a patient, he experienced some turbulent feelings within himself with regard to the material that the patient discussed in the interview. In the intimate contact that the student had with the patient he became aware of the fact that the patient, in addition to language, used non-verbal communication, like posture, gestures, facial expressions, etc. as a means of expressing his distress. The student also became aware of the limitations of verbal communications inasmuch as the patient quite often said exactly the opposite of what he actually wanted to say. The student recognized some of the aspects of doctor-patient interaction when he discussed this situation with his supervisor, who on occasion interviewed the patient in front of the student and brought to his notice the differences between his approach with the patient and that of the student.

In the outpatient clinic the student became aware of some of the problems the patient presented when he was seen on an outpatient basis. Here again his work was supervised by a staff person from whom he received support in his anxieties and uncertainties. As noted previously television was used as a medium of instruction in the outpatient clinic. The student had an opportunity to interview a patient on television and then the interview was discussed in a group with the help of faculty members. In the discussions he was helped to observe behavior of the

patient and interpret it. He also learned to identify the salient conflicts and defense mechanisms used by the patient during the interview. An attempt was also made to correlate the psychopathology seen during the interview with the historical material previously collected on the patient and the therapeutic strategy that was indicated as a result of these considerations. In some situations the student was able to see how the family experienced the illness of one of its members when he was brought for psychiatric help. How at times it was important to keep in mind the fact that the person who actually sought psychiatric help might not be the one who needed it most when compared to some of the other members of the family and how a patient's illness may be a stabilizing force in the family which as a unit had achieved a homeostasis through the symptoms of one of its members. Through such clinical work the student became cognizant of the fact that the central issue in the psychotherapeutic treatment is the personality of the therapist and how important it was for the therapist to have some amount of self insight into his own psychopathology and be aware of the way in which it helped or hindered the therapeutic relationship. Toward the end of his clinical assignment the student obtained some understanding of the phenomenon of separation and its psychological determinants both as they were experienced by him and the patient whom he had been caring for during his stay on the service.

During his clerkship the student received some familiarity with the following psychological tests: Shipley Hartford Intelligence scale, Sentence Completion test, Thematic Apperception test, Rorschach test, Minnesota Multiphasic Personality Inventory.

The student's total performance on the service was evaluated by the sum of the impressions of his five different supervisors (individual supervisor on inpatient service and in outpatient clinic, the ward physician, the director of outpatient clinic and the reading group leader) who had first hand knowledge about his work.

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Evaluating Psychiatric Training

Academic Knowledge and Clinical Concepts of Medical Students in Psychiatry

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THE PERFORMANCE of medical students in both pre-clinical and clinical years in areas such as psychiatry has lately come under relatively intensive *objective* investigation. If we were ever under the illusion that such objective evaluation of student skills was a simple and easy task, that fond illusion must, by now, be well dissipated. If we ever nourished the illusion that we could easily and effortlessly uncover the variables which contribute significantly to effective student learning and student performance in clinical skill, that illusion too, is now banished. Rather, investigators are far more likely, in one way or another, to echo or to resonate sympathetically with the comment by Salzman and Goldstein: "The problem of how to evaluate the acquisition and development of clinical skills remains a major concern of those involved with teaching and training of medical students . . . the difficulties involved in assessing clinical skills in psychiatry are especially perplexing. . . ." Interesting, provocative, and thoughtful attempts to deal with these difficult and perplexing problems include the development of scales by Cowles and Kubant, and the introduction of filmed interviews in order to provide for standardization by Stoller and Geertsma. It seems clear that the problem of developing adequate criteria has been more harassing than any other the investigator in this area has faced.

Our own study reported here was concerned with the objective of investigating what relations, if any, existed between certain formal, academic kinds of knowledge in psychiatry (as measured by objective tests) and the clinical application of such knowledge. To that end, we correlated examination scores in second year and third year psychiatry courses with subsequent more clinical types of criteria of a sort which we shall describe below.

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A comparison of the formal, academic knowledge gained in second and third year medical students, with their later clinical concepts brings to light some surprising results.

Procedure

Eighty-three medical students of the Kansas University School of Medicine provided the data for study. During their sophomore year all had been exposed to a seventeen-lecture series on psychopathology. Their total scores on two objective examinations given during this course constituted the academic variable for the second year of psychiatry. As juniors, these same students attended 32 lectures covering descriptions of the standard psychiatric syndromes. Upon completion of this course they were examined and their knowledge again evaluated on the basis of objective test performance. These scores served as the second academic variable. During their 10 week rotation on medicine as seniors, each student was assigned one full day per week to the psychiatry outpatient clinic for clinical training in diagnosis and treatment. It was at the beginning and at the conclusion of this assignment that the clinical criteria estimates were obtained. These criteria consisted of Q sort[†] descriptions of three of the broad psychiatric categories (*viz.*, psychotic, neurotic, personality disorder), and a fourth generalized "outpatient" category.

[†] The Q sort is essentially a rating procedure whereby a judge can evaluate and order a number of descriptive items or statements as they apply to specific patients or nosological types. (For example: The item "Is depressed," may be ordered in such a way to be "most" or "least" characteristic of a patient or type.) There are a number of advantages to the use of this technique in psychiatric research: it is handy and easily explained; it permits a large number of items to be used and finely discriminated ratings to be made; it facilitates comparison of descriptions made by different judges from different sources of data; it provides a standard language of behavior suitable for quantitative, statistical evaluation.

The Q sort deck used in this study was comprised of 108 items, which included both "phenotypic" and "genotypic" statements. (Phenotypic statements describe objective, observable characteristics or events such as "cheerfulness." Genotypic statements describe "dynamic," inferential characteristics or states such as "unconscious conflicts.") All of these items had been empirically screened for their coverage of the personality domain, for applicability to both sexes, for clinical pertinence, for ratability, and for variability in an earlier study by one of the authors.² These 108 items were force sorted into nine levels of a rectangular distribution along a continuum of descriptiveness for each category studied.

On the first day of their assignment to the psychiatry clinic, 60 students were instructed in the sorting procedure and divided into four groups. Forty-eight students were requested to compile Q sort descriptions of the "average" psychiatric outpatient; four, descriptions of the psychotic classification; four, the neurotic classification; four, the personality disorder. At the conclusion of their 10 weeks of training each student resorted the category he had previously described.

In addition, 24 students who were just beginning a 10 week assignment on the surgical service were divided into four equal groups. Each of these groups was also asked to describe by Q sort one of the four categories indicated above. (The surgical service was selected because the students were scheduled thence to rotate to psychiatry. Thus, for these students, their resorts upon assignment to psychiatry provided both a basis for measuring change following their experience on surgery and a measure of their academic knowledge prior to clinical training in psychiatry.)^{††} These 24 students also resorted the categories they had previously described at the conclusion of their 10 week period of training.

As a criterion against which to measure the accuracy of student Q sort descriptions, seven staff members in the Department of Psychiatry also compiled the four classification descriptions. These sorts were intercorrelated for each category and a composite sort (i.e., a mean category description) formed of the five most highly correlated of each type. This latter procedure was designed to eliminate from the staff criterion descriptions such error as might arise from sorter biases, atypical sorts, and the like.

Results and Discussion

As a matter of interest we present the correlation between the two academic variables. The scores for the second and third year psychiatry courses correlate

.34, which is significantly greater than zero at the .01 level or beyond. The magnitude of this coefficient, though significant, is small enough to indicate that the kinds of academic achievement are to a considerable extent different for the sophomore and junior years.

Reported in Table I are rank order correlations between total examination scores in sophomore psychiatry (psychopathology) and agreement of students with staff in senior psychiatry. The most obvious feature of this Table lies in the fact that 10 of the 12 coefficients for the four groups (psychotic, neurotic,

TABLE I
RANK ORDER CORRELATIONS BETWEEN
EXAMINATION SCORES IN SOPHOMORE
PSYCHIATRY AND CRITERIA OF CLINICAL
KNOWLEDGE IN SENIOR PSYCHIATRY^a

Q-Sort	T ₁		T ₂		T ₃	
Descriptions	N	r	N	r	N	r
Psychotic	6	-.77	10	-.35	10	-.34
Neurotic	6	-.63	10	-.36	10	.02
Pers. Dis.	6	-.14	10	-.43	10	-.25
Outpatient	6	.31	54	-.01	54	-.01
All Groups ^b	24	-.31	84	-.29	84	-.14
Psy. & Neur.	12	-.58*	20	-.39*	20	-.16
P.D. & Opt.	12	-.03	64	-.06	64	-.15

^a The coefficients appearing in this Table under columns headed r were obtained in the following manner. Each student description was correlated with a corresponding composite staff description for each category type. The resulting coefficients were then ranked for magnitude and the ranks correlated with those similarly assigned to total test scores. T in each instance indicates time: T₁ = time of the first sort (surgery); T₂ = time of the second sort (pre-psychiatry); T₃ = time of the third or terminal sort (post-psychiatry).

^b Total N negative r's significant at the .02 level.

* Significantly greater than zero at the .05 level.

personality disorder, outpatient) are negative. It would almost appear that any "knowledge" imparted to these students in the second year served to mislead them in forming an accurate conception of the clinical classifications! However, we take some solace from the fact that even the largest negative coefficient (-.77) is not statistically significant with the N of six involved. Still, some negative trend is reflected in the statistical Sign test^{†††} since 10 out of 12 negative correlations must be considered significant at the .01 level.

Near the bottom of Table I the psychotic and neu-

^{††} A report on the study of change in student conceptions of psychiatric disorders appears elsewhere. (See Ref. 3.)

^{†††} The Sign test estimates the probability of obtaining (in this case) as extreme an occurrence as 10 of 12 negative coefficients on the bases of chance alone.

rotic categories have been combined as have the personality disorder and outpatient categories. This is permissible on the ground that the Kruskal-Wallis one-way analysis of variance by ranks⁵ showed an overall difference among categories ($P = .01$), and the Mann-Whitney U^5 revealed that the four categories could be separated into two statistically homogeneous groups ($P = .02$). The decreasing significance of association between grades in psychopathology and conceptions of clinical categories is of some interest. For the psychotic and neurotic categories combined there is a significant negative relationship at T_1 ($r = -.58$). There is a smaller but still significant relationship at T_2 ($r = -.39$). However, at the conclusion of the clinical clerkship the psychopathology test scores are no longer significantly (negatively!) related with the students' conceptions of the psychotic and neurotic category types.

Presented in Table II are rank order correlations between total examination scores in junior psychiatry (psychiatric nosology) and agreement of student with staff in senior psychiatry. For the four clinical categories there is only one significant correlation ($r = .36$).

We are struck with the absence of any demonstrable association between test scores for either course and concepts of these clinical classifications, *especially* after completion of clinical training. We are frankly puzzled by this state of affairs! Perhaps the most impressive moral that these data teach is that we need even greater diligence and ingenuity in devising means of assessing just what it is we want our students to learn.

References

1. Cowles, J. T., and Kubant, A. J. Improving the

TABLE II
RANK ORDER CORRELATIONS BETWEEN
EXAMINATION SCORES IN JUNIOR
PSYCHIATRY AND CRITERIA OF CLINICAL
KNOWLEDGE IN SENIOR PSYCHIATRY^a

Q-Sort	T ₁		T ₂		T ₃	
	N	r	N	r	N	r
Psychotic	6	-.26	10	-.24	10	.28
Neurotic	6	-.32	10	.54	10	.20
Pers. Dis.	6	-.03	10	-.44	10	-.20
Outpatient	6	.54	54	.14	54	.36**
All Groups ^b	24	-.02	84	.00	84	.16
Psy. & Neur.	12	-.19	20	-.40*	20	-.18
P.D. & Opt.	12	.31	64	.08	64	.29*

^a The coefficients in this Table were obtained in a manner similar to that described in Table I.

^b Total N negative r 's not significant.

* Significantly greater than zero at the .05 level.

** Significantly greater than zero at the .01 level.

Measurement of Clinical Performance of Medical Students. *J. Clin. Psychol.*, 15:139, 1959.

2. Marks, P. A. An Assessment of the Diagnostic Process in a Child Guidance Setting. *Psychol. Monogr.*, 75:No. 3 (Whole No. 507), 1961.

3. Marks, P. A., and Seeman, W. A Study of Change in Stereotype Conceptions of Psychological Disorders. *J. Clin. Psychol.*, 18:507, 1962.

4. Salzman, L. F., and Goldstein, R. H. Changes in Clinical Judgment as a Function of Psychiatric Education. *J. Med. Educ.*, 36:914, 1961.

5. Siegel, S. *Nonparametric Statistics for the Behavioral Sciences*. New York: McGraw-Hill, 1956.

6. Stoller, J. R., and Geertsma, R. H. Measurement of Medical Students Acceptance of Emotionally Ill Patients. *J. Med. Educ.*, 33:585, 1958.

WHAT IS DRUG SAFETY?

Safety is a relative thing; it can never be black or white. A drug which would be considered incredibly dangerous as a substitute for aspirin might well be useful in the treatment of a life-threatening disease. Furthermore, safety can only be judged in the light of current scientific information. As a consequence, a drug properly released as safe for use may later be made even safer by a technical advance. The World War II penicillin was made by production methods that today seem crude, but it saved countless lives.—John T. Connor, President, Merck & Co., to American Hospital Association, Sept. 18, 1962.

Somatic Disease or Symptom?

Somatic Complaints as Clues To Masked Psychiatric Depressions

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Introduction

WITHIN THE DISCIPLINE of psychiatry, depression is a complex and sometimes confusing term which may, as Lehmann suggests, refer to an affect, a syndrome or a diagnostic category.

Depression, however the term may be used, is frequently difficult to recognize, perhaps because many patients with psychiatric depressive reactions do not show obvious signs of depression;¹⁴ dejection and sadness are sometimes obscured by physical complaints. For example, Skottowe reported that in a series of 68 patients hospitalized for nonpsychiatric medical investigation, 25 per cent were suffering from depressive illness. In 1946 Bennett documented 740 medical or surgical procedures conducted on 150 patients who presented with physical complaints but were later found psychiatrically ill. More than 50 per cent (85) of these patients had depressive reactions. Ripley showed that in one general hospital 28 per cent of all psychiatric consultations concerned depressive reactions.

Depressive illnesses occurring without overtly stated or demonstrated mood alteration have been termed "depressive equivalents,"⁶ "minor depressive syndromes,"¹² "masked depressions,"^{4, 7} "incomplete depressions,"¹¹ and "latent depressive affects."³ All have one feature in common: that the depression is displaced or obscured by one or more concomitants of depression—a somatic complaint, physiological slowing, or "a mixture of anxious and obsessional features."⁶ The mosaic of somatic complaints in these depressions may range from "dimming of vision to perineal itching."¹¹ Such multiple, ill-defined and anomalously grouped symptoms in depressive illness have been reported by several authors, and described in considerable detail elsewhere.⁶

Less frequently reported as a presenting symptom is the complaint which centers about a prosthetic de-

vice. There are few instances recorded in the literature to substantiate the impression that depressed patients often complain of discomfort from wearing false teeth, eyeglasses, or hearing aids. Three cases are discussed in this paper as examples of a depression in which each chief complaint centered about eyeglasses, the purpose being to point out that patients who persistently voice apparently ungrounded complaints about a prosthetic device may be psychiatrically or pathologically depressed.

Case Reports

Case 1: Mrs. P. A. was a white 56-year-old saleswoman, who was admitted to the Department of

Depression, a common psychiatric illness, is often obscured by somatic complaints or by complaints centered about a prosthetic device.

The three cases reported herein illustrate depression masked by or occurring concomitant with eyeglass complaints. After treatment for depressive illness, the eyeglass complaints and the depression of each patient subsided.

Psychiatry at the University of Kansas Medical Center in June, 1961. Although she denied complaints other than eyeglass difficulty, her family stated that over a year's time she had had gradually increasing anorexia, weight loss, insomnia, and decrease in work performance. Her social and recreational activities gradually ceased. The patient complained only of trouble with her eyeglasses, and she visited many ophthalmologists and optometrists but was never satisfied with either new fittings or the failure to identify clinical disease. She denied all complaints except those related to her vision.

Nothing unusual was found about the patient's early childhood. She grew up as a dependent, quiet, intelligent girl. She had no difficulties in school through the twelfth grade, and when she finished mar-

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ried a lawyer, which marriage terminated after a few years. She was said to have made a suicidal gesture after excessive alcoholic intake at this time. She later began living with her sister and brother-in-law, with whom she has remained for the last thirty years. Careful review of her past history revealed that there had been a prolonged period of mourning following the death of her father, which occurred within twenty-four months of the onset of the present illness.

Physical and laboratory examinations in the hospital were not remarkable, except for the presence of a moderate myopia already corrected by the lenses prescribed. On psychiatric examination she showed herself as an attractive but quiet, passive and somewhat bland middle-aged woman. She seemed perplexed and kept her gaze averted from the examiner. During the examination she frequently took off her glasses, looked at and fingered them, and replaced them. She did not appear to be depressed and denied any alteration in mood. There was no alteration in production, progression or content of thought except for the preoccupation with her ill-fitting glasses. She was well oriented with intact memory and intellect. Although her judgment in ordinary circumstances was not impaired, she was totally oblivious to the significance of her relatively complete incapacitation.

She appeared mildly depressed after admission and in addition to psychotherapeutic management she was put on imipramine (Tofrānil®, Geigy Pharmaceuticals), 25 mg. three times daily with no appreciable effect. Within a brief period she was started on electroconvulsive treatments three times a week. After the fourth treatment, her complaint regarding vision and ill-fitting glasses had subsided, her appetite had improved, and she began sleeping through the night. Her spirits improved, and she became pleasant and smiling and displayed considerable appropriate humor. She returned to work and moved back to her brother's home. She has remained in outpatient therapy for approximately one year, rarely mentions her glasses, and appears to lead an active, productive life in the community.

Case 2: Mrs. F. G. was a 58-year-old widow admitted to the University of Kansas Medical Center in December of 1961 following a long history of rheumatoid arthritis. She was admitted with complaints regarding discomfort with her glasses and headache. During the previous years she had had her glasses changed several times, complained "they still felt heavy" and "I continued to have that strange feeling."

Several weeks before her admission, the patient had noticed increasing difficulty in sleeping, with early morning awakening, apathy and loss of interest in usual church and social functions. She had experienced no depression of mood or weeping.

Her early history was marked by her mother's death shortly after the patient's birth and frequent moves to live with other family members. She enjoyed school and was an average student but quit in the middle of high school because of typhoid fever. She was married at age sixteen, had two children, and was divorced at age twenty-one. Shortly after she remarried, somewhat unhappily, and after her second husband's accidental death, returned to work as a grocery clerk. She developed arthritis and has not been able to work since. On examination she appeared remarkably old and tired, but not depressed. There were marked arthritic changes in her hands, ankles and knees, but no other discernible physical deformities. She was cooperative but somewhat tense and anxious. Her speech, although logical and coherent, was hesitant and slow. Her memory was impaired both in recent and remote recall, although this seemed to be more on a basis of a concentration difficulty than organic impairment.

After an initial period of psychotherapeutic investigation, the patient was started on imipramine (Tofrānil), 25 mg. three times daily, in addition to her psychotherapy. She became gradually more sociable, appeared less depressed, although she continued for a period to have difficulty sleeping. She was eventually discharged and treated as an outpatient and is now functioning well with no problems of sleep or appetite and no complaints with her glasses.

Case 3: Mrs. I., a 67-year-old widow, was admitted for psychiatric treatment to the K.U. Medical Center in December of 1960 with very vague complaints about nervousness and excessive smoking. She had had a depressive reaction in 1955 which required hospitalization. In 1956 she required hospital care for bronchitis and hepatitis but was also depressed and had complaints of burning eyes. These continued, after discharge, and a year later she was again admitted with a complaint of nervousness and eyes burning, admitting at that time that she also had a lack of interest in her housework and that she had become socially apathetic. Two years later (1958), she had again been hospitalized for psychiatric treatment; her complaint was depression which lifted after 18 ECT treatments, although she continued to complain about her vision. Another two-year period passed and her current admission was occasioned by a suicidal gesture in which she took an overdose of sleeping medication, stating that she felt tense and said, "I can't keep my glasses on." On investigation she related no unusual information about her early childhood, except that her father had died when she was quite young. She was the youngest of two siblings. She was an average student and after one semester of college taught in a rural school for six

years, at the end of which time she married. Three years later her husband died, and she resumed teaching for another three years until her remarriage, which lasted 30 years until her husband's death, following which she became depressed.

At the time of her admission, the only positive physical finding was a small lenticular opacity in the left eye. On psychiatric examination, however, she was agitated, restless, and asked for reassurance while wringing her hands. There was no retardation in speech nor any evidence of thinking difficulties. She appeared moderately depressed, but did not complain of depression.

She received eight ECT treatments and shortly after these treatments were begun, she began to improve in mood and sense of well being. Periodically she complained about the glasses, but these complaints gradually diminished. She is now being seen as an outpatient, and for several months has had no complaints whatsoever.

Discussion

Other authors have reported the relationship between ophthalmologic complaints and depressive disease. Jacob Lutz noted the case of a seven-year-old boy with psychiatric depression who had "objective diminution of visual acuity. This spontaneously cleared after successful psychotherapy for the depression." Kraines also described a patient remarkably similar to ours. "One such patient changed his glasses twelve times in a futile attempt to correct this 'fog-giness' and after the depression lifted found his original glasses adequate." Huston similarly wrote, "About one-third of them (depressed patients with somatic complaints) have had their glasses changed, sometimes frequently." Cleghorn and Curtis noted, "Visual disturbances, such as fog-giness or annoying brightness of lights, may be encountered despite complete absence of alterations in visual function upon objective examination."

In many respects the depressive illness of these patients resembles what A. Meyer, Muncie and Diethelm refer to as "catathymic" or mood-bound depressions. Here the entire illness seems to center about or have its affect bound in either a single complaint or organ system. Our three cases have a similar flavor.

One might raise many interesting questions and make a number of speculations concerning the particular manifestation of depression these patients exhibit and the "whys" for their illnesses; however, these factors are beyond the scope of this paper. Here we are interested in documenting the fact that displacement of the usual symptoms sometimes occurs in depressive illness.

We believe it is reasonable to conclude that an

otherwise inexplicable somatic or prosthetic complaint, occurring alone or in conjunction with other vague complaints such as nervousness, can be and often is the initial complaint in what is actually a primary psychiatric depression.

References

1. Adamson, G. R.: Clinical Depression. *Canad. M. A. J.*, 57:1, 1947.
2. Bennett, A. E.: Faulty Management of Psychiatric Syndromes Simulating Organic Disease. *J.A.M.A.*, 130: 1203-1208, 1946.
3. Cleghorn, R. A. and Curtis, G. C.: Psychosomatic Accompaniments of Latent and Manifest Depressive Effect. *Canad. Psychiat. Assoc. J.*, Vol. 4, Special Supplement, 1959.
4. Hohmann, L.: Some Facts the Internist Should Know About Depression. *Dis. Nerv. Syst.*, 1:7, 1940.
5. Huston, P. E.: Depression as a Psychosomatic Disorder. *Mississippi Valley M. J.*, Vol. 78, No. 2, March, 1956.
6. Kraines, S. H.: *Mental Depressions and Their Treatment*. The Macmillan Co., N. Y., 1957.
7. Kral, V. A.: Masked Depressions in Middle-Aged Men. *Canad. M. A. J.*, 79, No. 1, July, 1958.
8. Lehmann, E. E.: Psychiatric Concepts of Depression: Nomenclature and Classification. *Canad. Psych. Assoc. J.*, 4: Special Supplement, S1-S12, 1959.
9. Lutz, Jakob: Einschränkung der Sehschärfe als Folge Seelischer Depression bei einem Kinde. *Ophthalmologica*, 131:388-393, 1956.
10. Ripley, H. S.: Depressive Reactions in a General Hospital. *J. Nerv. Men. Dis.*, 105:607-615, June, 1947.
11. Roth, Wm. F., Jr.: Psychosomatic Aspects of Depression. *J. Iowa M. Soc.*, 42:94-101, 1952.
12. Skottowe, I.: *Clinical Psychiatry*, p. 167. Eyre and Spottiswoode, Ltd., London, 1953.
13. The Statistical Abstract of the United States for 1961. Table No. 62, U. S. Dept. of Commerce, Washington, D. C.
14. Yonge, K. A.: Depressions in Disguise. *Canad. M. A. J.*, 74:693, May, 1956.

All great discoveries are made by men whose feelings run ahead of their thinking.—C. H. Parkhurst

All the strength and force of a man comes from his faith in things unseen.—James Freeman Clarke

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Deafness and School

Middle Ear Effusion

G. O. PROUD, M.D., and F. R. KIRCHNER, M.D., *Kansas City, Kansas*

THE ACCUMULATION of fluid within the middle ear cavity ranks second in frequency only to cerumen blockade of the external auditory canal as a cause of hearing loss in children. The apparent increase in the number of patients with this condition probably stems from the following sources: the routine electronic hearing testing of school children and the increased diagnostic prowess of the examining physician. Middle ear effusion is also referred to as secretory otitis media, middle ear catarrh and middle ear hydrops. Senturia *et al.*¹ classified the middle ear fluids into serous, mucopurulent, purulent and mucoid categories; but it is probable that the purulent and mucopurulent types represent varieties of true bacterial otitis media with which the clinician is already on familiar terms. The fluid of the serous variety is sterile. If the disease has persisted for more than a few weeks the mastoid antrum and air cells will, in most instances, be found to contain the same liquid.

The condition is most commonly encountered in the fifth to the eleventh years of life and exhibits no preference for race or sex. The 12 to 30 age group seems to escape as well as individuals over the age of sixty. Its frequency before the age of five remains unknown; since pain and discharge are not amongst its features and minor hearing losses in very young children often escape detection.

Etiology

Eustachian tube obstruction appears to be the common denominator and any situation which leads to it can be counted among the provoking factors. Prolonged postnasal packing, enlarged adenoid, upper respiratory tract infections, allergic rhinitis and choanal polyps and cysts are all abnormalities which can induce tubal block. Benign or malignant nasopharyngeal neoplasms should always be suspected in any subject with middle ear effusion, particularly in the case of the adult.

The child with the cleft palate is very prone to develop it for reasons unknown; but presence of food in the nasopharynx, faulty tubal musculature, extension of oral bacteria to the postnasal space and

impingement of speech appliances upon the tubal orifices must remain suspect.

Careless adenoid surgery with inadvertent excision of the torus tubarius leads to tubal stricture and eventual middle ear effusion in a significant number of instances.

The eustachian tube is open only during the acts of chewing, yawning and swallowing, but these brief

Middle ear effusion is a very common cause of hearing loss in children. Early detection, treatment and rehabilitative measures are essential to the prevention of the restriction of intellectual development and the introduction of psychological trauma.

Middle ear effusion is one of the earliest signs of malignant disease of the upper respiratory tract of certain patients.

Conservatism in surgery and treatment, coupled with careful periodic observation, are important measures in the management of the condition. Careful adenoidectomy is essential if one cause of the difficulty is to be eliminated.

moments of patency provide an avenue for ventilation of the middle ear cavity and permit an equalization of the air pressure in that cavity with that of the outside world. When tubal obstruction occurs the air in the middle ear space is absorbed by the mucosal blood system, and a relative low pressure appears in the cavity followed by extravasation of fluid into the space. As the fluid pressure increases the liquid finds its way through the aditus ad antrum into the mastoid antrum and, at length, into the mastoid air cells. The barometric pressure changes incited by rapid descent during air flight may also induce effusion of fluid into the middle ear cavity (aerotitis).

Severe body trauma, not necessarily involving direct head injury, mysteriously gives rise to middle ear effusion in an appreciable number of cases. Despite the formidable number of listed causes, however, the

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immediate factor of guilt remains unknown, in the majority of patients who present with the disease.

Symptoms

Full feeling in the ear, swishing fluid noises, a sensation of speaking with the head in a barrel, increase or decrease in auditory acuity upon assuming the recumbent position and persistent hearing loss are the most frequent complaints. Many youngsters do poorly in school and are relegated to the "dumbbell section" of the class without cause, for they are actually suffering from this type of hearing loss. An alert, informed teacher may suspect such loss; but the oversized classes of pupils today frequently detract from the harried teacher's acuteness. The child may undergo psychological changes and withdraw from the social group to a position of isolation and ridicule. It should be emphasized that any child who is doing poorly in his studies deserves a thorough audiologic evaluation.

Physical Findings

The ear drum membrane may be dull and thick in appearance, may be lacking in landmarks; or a yellowish discoloration may be apparent. The manubrium of the malleus may appear unduly white. Bubbles may be visible, but a true fluid level is a rare finding. More often than not the tympanic membrane is normal in appearance.² The tuning fork will

show that air conduction is poorer than bone conduction, but such a subjective response from a child is not to be naively accepted.

The audiometric test will reveal normal bone conduction with depressed air conduction in a flat curve pattern (*Figure 1*). The loss for air conduction seldom exceeds the 30 decibel level, and when it does other causes of hearing loss should be suspected.

Clinical Course and Complications

In most instances the condition is self-limited³ and disappears when the child enters his teens. Some are intermittent and exhibit a hearing loss during one examination and none on a subsequent test. Some are persistent and have existed for years before they come to a physician for management.

Suppression of intellectual development and psychologic changes are the commonest sequelae. On rare occasions chronic tympanic membrane retraction leads to perforation of the membrane and invasion of the middle ear by epithelium from the tympanic membrane surface and eventual cholesteatomatous destruction of middle and inner ear structures. The latter type of extension leads to its own list of complications.

Treatment

In the adult a careful nasopharyngeal examination is indicated, and if this space is clear the patient

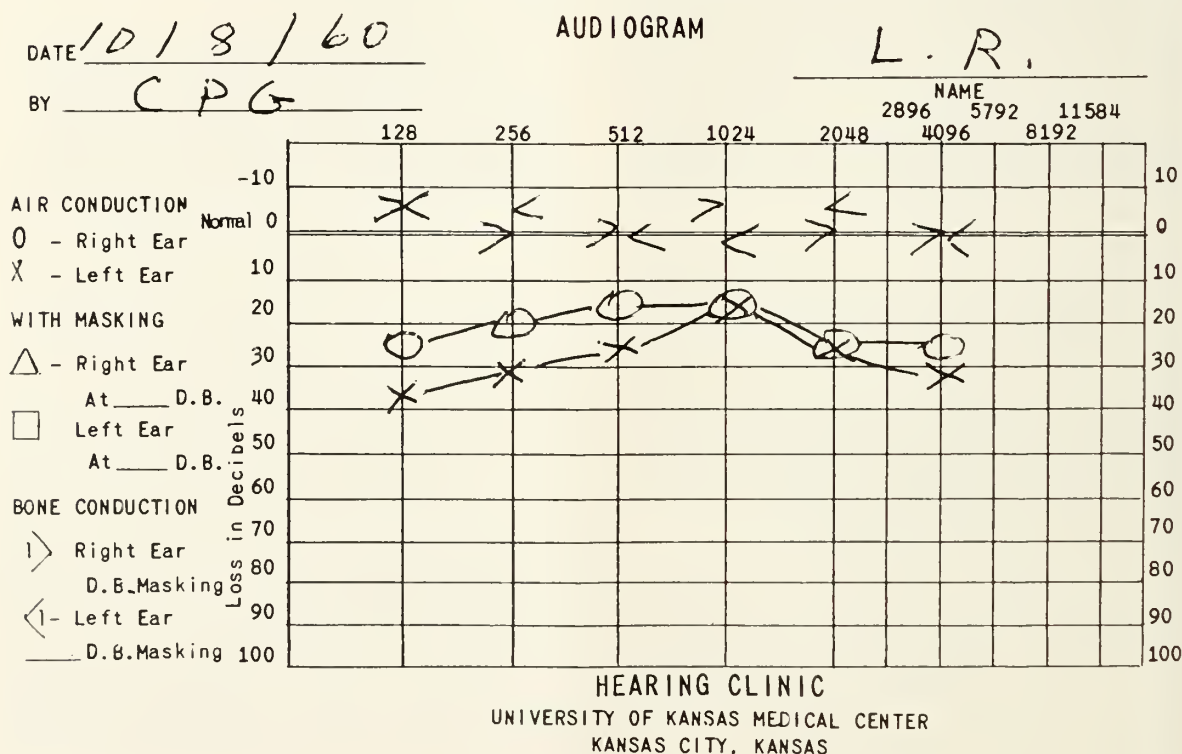


Figure 1

should be re-examined at intervals of six weeks over a period of many months. A cancer of the Fossa of Rosenmueller may lead to effusion long before the tumor itself is visible. Since malignant tumors of the paranasal sinuses may be present, an x-ray of these structures should be ordered.

In the child, adenoidectomy and myringotomy with liberation of the fluid by suction offers a 25 per cent chance for definitive cure. General systemic measures to prevent and shorten upper respiratory tract infections should be instituted, and allergic disease should be controlled if possible. Obstructing cysts or polyps of the nose or nasopharynx should be removed. Auto-insufflation of the middle ear may be beneficial, and children can be trained to play the game of blowing up a balloon with the nostrils held shut several times each day.

The intermittent type usually persists for six weeks or less, and oral vasoconstrictors may be administered to aid in shrinking the tubal mucosa. Repeated myringotomy is unwise, for it seldom brings permanent relief. It has been suggested that small polyethylene tubes should be placed through the tympanic membrane to afford prolonged drainage of the liquid, but such tubes are hard to maintain in place in the adult and more so in children. Furthermore, the tubes frequently become plugged with the dried fluid and cease to function.

When conservative measures fail the child deserves preferential seating near the front of the classroom if the hearing loss is no greater than 20 to 25 db. in the conversational range in both ears. The teacher should be advised of the handicap, and if the defect is unilateral the youngster should be seated with his good ear nearest the instructor.

Too frequent surgical intervention is unwise, not because of resultant damage, but because it is seldom productive of benefit. If the bilateral auditory loss exceeds 20 to 25 db. a hearing aid for use during school hours is indicated, and it may be discarded when the child "outgrows" the problem. The patient should be re-examined at least every three months so cholesteatomatous invasion, if it occurs, may be dealt with early and conservatively. At each examination repeat audiometric assessment should be carried out so that the hearing aid may be temporarily or permanently discarded as soon as possible, since the instrument does unfortunately call forth ridicule from fellow students. Although an observant teacher or parent may know when hearing loss exists, a small child, as a rule, does not.

Prevention

Flying in non-pressurized planes is to be avoided especially in the face of acute upper respiratory tract

infections or allergic episodes. Adenoidectomy, regardless of the cause for which it is done, should inevitably be carefully performed under indirect visualization with a mirror and safe instruments in order to avoid damage to the nasopharyngeal orifice of the eustachian tube. It must be remembered that the same operation which may bring an end to the problem of middle ear effusion may also be responsible for its genesis. A surgical approach to the correction of tubal stricture has not as yet been devised.

References

1. Senturia, B. H., Gessert, C. F., Carr, C. D. and Baumann, E. S.: Middle Ear Effusions: Causes and Treatments; Trans. Am. Acad. O.O.R.L. 64, No. 1, pp. 60-75; (Jan.-Feb.) 1960.
2. Wehrs, R. E. and Proud, G. O.: Conductive Deafness in Children; Arch. of Otolaryngology, 67, pp. 16-19; (Jan.) 1958.
3. Goetzing, C. P., Embrey, J. E., Brooks, R. and Proud, G. O.: Auditory Assessment of Cleft Palate Adults; Acta Oto-laryng. 52, pp. 551-557, (Aug.) 1960.

CHILDREN'S TICS

Children's tics, though generally irritating to parents, fortunately don't last forever. Most children ultimately outgrow them—only a few, perhaps 6 per cent, continue to have them in adult life.

A British physician describes tics as "sudden, involuntary, frequently repeated purposeless movements of groups of muscles, resulting in eye-blinking, shoulder shrugging, contortions or twitching of the face, mouth-opening, sniffing, tongue-clucking, throat-clearing, laughing or sighing. They increase with excitement, decrease when the child is distracted or concentrates, and disappear in sleep."

Tics are more common in boys, particularly the highly strung, wiry, asthenic type. The peak age of their onset is 6-7 years; 70 per cent, according to the editorial writer, begin during the first ten years of life.

"Tics are commonly regarded as motor manifestations of psychological tension," the author said. However, there appears to be a familial tendency, since tics have been found to occur in 30 to 40 per cent of close relatives.

"By far the most important part of treatment consists in efforts to modify the parents' attitude and to remove all discoverable causes of insecurity," he said. Scolding, and appeals to a child to keep still, "do nothing but harm." He advises that all friction arising from the tic "should cease; the parents must ignore the tic entirely."

Children's Tics, *British Medical Journal* 2:903 (Oct. 6) 1962.

Cardiac Rhythm

Implantable Pacemakers for the Management of Complete Heart Block

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COMPLETE HEART BLOCK is usually treated by the use of sympathomimetic drugs, particularly isoproterenol, vagolytic agents and corticosteroids. In some patients, however, these medications are not only difficult to administer but also are unsuccessful in preventing symptoms, particularly Stokes-Adams attacks. In recent years use has been made of electronic devices in the treatment of various cardiac arrhythmias and most recently a variety of pacemaker has been designed for the control of complete heart block. There has been a gradual evolution from external pacemakers to those which are completely implantable.

This report concerns our experience with 11 patients who had pacemakers implanted. The patients selected for implantation of cardiac pacemakers had complete heart block due to arteriosclerotic heart disease. Pertinent patient data is presented in *Table 1*. There were eight men and three women in the series, with an age range from 44 to 77 years. Eight of the eleven patients had Stokes-Adams attacks. These attacks were primarily due to prolonged asystole in five patients and ventricular tachycardia in the other three. Two patients had dizziness and lightheadedness with exertion and one patient was in severe congestive failure.

Although symptoms were present for many years in some patients, recent exacerbations made more aggressive treatment mandatory. Four of the patients had prolonged medical management prior to hospitalization which was only partially successful in preventing Stokes-Adams attacks. In five of the patients episodes of syncope were of recent onset but were refractory to drug therapy. The treatment used prior to insertion of pacemakers in the individual patients is summarized in *Table 1*.

Isoproterenol was administered by continuous intravenous infusion in nine of the eleven patients until the pacemaker was in place. In one patient (No. 9) the heart rate was maintained by a pacemaker catheter

passed intravenously into the right ventricle. In another patient (No. 10) previously implanted myocardial electrodes were exposed and connected to an external pacemaker.

In the operating room, electrodes were placed on the patient's chest and connected to an electrocardiographic monitoring device which automatically initiated external pacing following asystole of preset duration. General endotracheal anesthesia was then induced. The heart was approached through a short left anterolateral thoracotomy. The pericardium was

The treatment of symptomatic complete heart block in eleven patients by implantable pacemaker is presented. Results continue to be satisfactory in eight patients.

Patient selection, operative technique and complications are discussed.

opened to expose the left ventricular myocardium. A short transverse incision was made in the left upper quadrant of the abdomen, just above the level of the umbilicus, and a subcutaneous pocket bluntly fashioned to hold the pacemaker unit. A tunnel was developed from this area to the thoracotomy incision and the electrodes passed through it. The electrodes were then attached to the myocardium as recommended by Kantrowitz. Closure was accomplished in a routine manner, taking care to avoid kinking the electrode wires.

In the first patient an Electrodyne pacemaker was used.² In the other patients, the pacemaker employed was manufactured by the General Electric Corporation.⁴ This unit consisted of a transistorized oscillator powered by mercury batteries producing a pulse of 5 milli-seconds duration and 3.9 volts peak voltage. It was completely encased in Teflon, measured 2.75 x 1.8 x 0.9 inches and weighed about five ounces.

The lead wires were also Teflon covered, about 18

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TABLE 1. SUMMARY OF CLINICAL DATA

<i>Case</i>	<i>Age Sex</i>	<i>History</i>	<i>Preoperative Treatment</i>	<i>Interval Admission to Operation</i>	<i>Complications</i>	<i>Postoperative Treatment</i>	<i>Result</i>
No. 1	70 M	Syncope with convulsions, dyspnea, orthopnea	Isoproterenol Nitroglycerin Corticosteroids Chlorothiazide External pacemaker	6 days	Ventricular fibrillation, Ventricular extrasystoles	Defibrillator Procaine amide	Died suddenly 9th p.o. day
No. 2	75 M	Syncope of increasing frequency	Isoproterenol Belladonna Corticosteroids	11 days	Ventricular extrasystoles Iatrogenic Cushing's disease	Corticosteroid withdrawal	Doing well 7 mos.
No. 3	47 F	Previous myocardial infarction, syncopal episodes	Isoproterenol Atropine Chlorothiazide Corticosteroids	3 days	None	Corticosteroid withdrawal	Doing well 6 mos.
No. 4	63 M	Incapacitating dizziness and lightheadedness	Isoproterenol Belladonna Nitroglycerin Corticosteroids	3 days	Bleeding steroid ulcer	Corticosteroid withdrawal	Did well 5 mos. Wire broken, new pacemaker inserted
No. 5	72 F	Syncope, fatigue, confusion, congestive failure	Isoproterenol Digitalis Corticosteroids	Same day	None	Digitalis Chlorothiazide	Electrode failure 4 mos.
No. 6	77 M	Recurrent syncope	Isoproterenol External pacemaker	Same day	None	None	Doing well 3 mos.
No. 7	67 M	Syncope, dyspnea, chest pain	Isoproterenol Corticosteroids External pacemaker	Same day	None	None	Doing well 3 mos.
No. 8	76 M	Dyspnea, orthopnea, mild failure	Reserpine Digitalis	8 days	Occasional ventricular extrasystoles	Digitalis Quinidine	Doing well 2½ mos.
No. 9	67 M	Previous myocardial infarction, recurrent syncope	Nitroglycerin Catheter electrode with external pacemaker	Same day	None	None	Died suddenly 2½ mos.
No. 10	44 M	Previous myocardial infarction, previous pacemaker, severe failure	Digitalis Diuretics External pacemaker to previous internal electrodes	22 days	None	Digitalis Chlorothiazide	Doing well 2½ mos.
No. 11	67 F	Convulsions, 7 years syncope	Isoproterenol Phenobarbital	Same day	None	None	Doing well 2 wks.

inches long, with the final inch being bare and attached to surgical needles for implantation in the myocardium. The discharge rate of the pacemaker was adjustable and preset by the manufacturer at the rate requested by the physician, usually 56 to 66 per minute.^{2, 4}

A remote control device which can increase the preset rate of the implanted pacemaker up to 120 per minute is available with the General Electric unit. This unit consists of a self-contained pulse generator which is inductively coupled to the internal pacemaker through a coil placed on the skin over the pacemaker pocket (*Figure 1*). This coil is connected to the external control by a cable so that the control unit can be conveniently carried in a pocket. The external control unit was used to increase the preset



Figure 1. Photograph showing the incisions used and the external control unit in place over the pacemaker pocket.

rate to about 80 in several patients in the early postoperative period. It is also desirable to increase the pulse rate during periods of stress such as infection, blood loss and exercise.

Following operation, all patients received antibiotics for the first week. Digitalis was continued in those patients with congestive failure. When preoperative corticosteroids had been used, dosage was increased during operation and then gradually reduced.

Results

Eleven patients have undergone implantation of internal pacemakers since January, 1962. Ten of these patients survived and nine are still living. One death (No. 1) occurred on the ninth postoperative day. This was a 70-year-old white male who was admitted complaining of lightheadedness, increasing dyspnea on exertion, orthopnea and an episode of syncope on the morning of admission. The electrocardiogram showed a complete heart block with a

ventricular response of 36. In spite of treatment with isoproterenol, nitroglycerin, corticosteroids and chlorothiazide, he had recurrent syncopal and convulsive episodes triggered by periods of asystole and ventricular tachycardia. He required repeated use of the external pacemaker. Following the implantation of a pacemaker, five episodes of ventricular fibrillation occurred in the operating room. Each time resuscitation was accomplished by electrical defibrillation. In the immediate postoperative period one additional episode occurred again requiring the use of the defibrillator. Intravenous procaine amide was used to reduce the irritability of the myocardium. He subsequently slowly improved and was ambulatory. On his ninth postoperative day, he was found dead in bed. Autopsy disclosed very extensive myocardial fibrosis with multiple areas of recent infarction and necrosis. The pacemaker was checked and found to be working satisfactorily.

A second patient (No. 9) was doing well but died suddenly two and a half months after implantation of the pacemaker. Postmortem examination showed the pacemaker to be in place and functioning. There was no gross evidence of recent myocardial infarction. It is presumed that death was due to a sudden arrhythmia.

All except two patients (Nos. 1 and 4) left the hospital within two weeks of operation. The pulse rate ranged from 56 to 66 in these patients whereas preoperatively the range had been 28 to 40 per minute. Four patients required no medication. Three patients were still on a corticosteroid withdrawal program. Three patients were continued on digitalis because of the presence of previous congestive heart failure. In those patients with Stokes-Adams attacks, there has not been any recurrence of these symptoms while the pacemakers were functioning. Congestive failure improved dramatically with the establishment of an increased pulse rate.

In seven patients, the postoperative course was uncomplicated. In two patients ventricular beats independent of the pacemaker occurred in the early postoperative period but were not of clinical significance. Infections were not encountered in this small series.

The follow-up now extends from two weeks to seven months. During this time there have been two electrode failures. The pacemakers are known to be functioning in the other patients up to the time of this report. In patient No. 5 the pulse reverted to 36 per minute four months after implantation of the pacemaker. An electrocardiogram showed a pacemaker impulse, suggesting that failure was due to a broken electrode wire or detached electrode. The clinical status of this patient is unknown to us at present.

Patient No. 4 noted the return of a slow pulse and

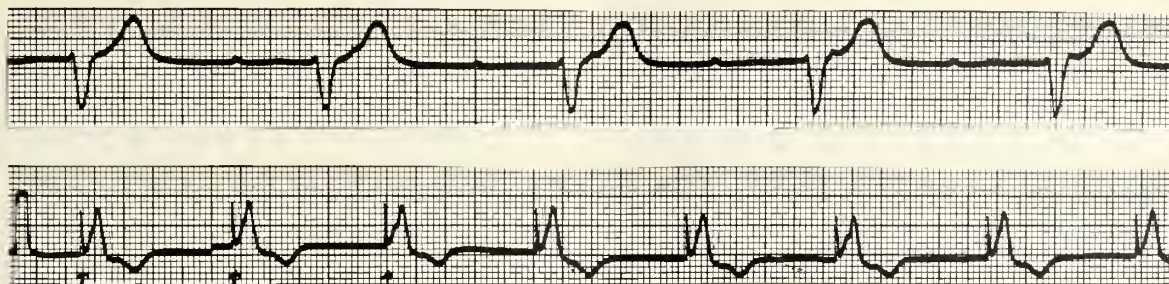


Figure 2. Typical electrocardiogram—Lead II. Above—prior to implantation of the pacemaker. Below—showing pacemaker impulse (arrows) and ventricular response.

lightheadedness six months after implantation of the pacemaker. At re-operation a broken electrode wire was found and the entire unit replaced. He was discharged from the hospital after an uneventful postoperative course.

Three of our patients (Nos. 2, 3 and 4) had received corticosteroids for prolonged periods prior to operation. Patient No. 2 developed iatrogenic Cushing's disease. Although no major complication occurred, he did experience a prolonged postoperative convalescence. Patient No. 4 developed a bleeding "steroid ulcer" postoperatively which required whole blood transfusion.

Another patient (No. 10) had a pacemaker implanted 13 months previously at another hospital in California. One of the lead wires was broken at the time of the operation but repaired in the operating room. Eleven months later he rapidly developed heart failure and was found to have a pulse rate of 30. The failure was refractory to medical management. The patient's clinical condition was too critical to permit immediate implantation of a new pacemaker. The previous pacemaker electrode wires were exposed through a small skin incision and attached to an external pacemaker. When the rate was maintained at 75 per minute, the cardiac output was sufficiently increased to correct the congestive failure, with the continued use of digitalis and diuretics. Seventeen days later the old pacemaker and electrodes were removed and a new unit implanted. Two months postoperatively the patient again developed heart failure refractory to medical management. Since the pacemaker had been preset at 60 per minute, an external control unit was used to increase the rate to 75, and the heart failure was again corrected.

Discussion

Bellet, Friedberg and Wood all report that the prognosis is very grave for patients with heart block and repeated Stokes-Adams attacks. Other authors^{6, 7} have reported prolonged survival in some patients

with complete heart block and Stokes-Adams attacks. The presently available pacemakers are not free from mechanical and electronic failure. However, their use has secured sufficient palliation so that they should be considered in the treatment of symptomatic intermittent or constant heart block. At the present time, then, pacemaker implantation is indicated in those patients with complete heart block who are symptomatic in spite of medical management.

There has been symptomatic improvement in all surviving patients. Previously severely incapacitated patients have been able to return to relatively normal activity. This has also been the experience of other investigators.^{2, 4}

Once a patient has been selected for pacemaker implantation, this should be accomplished without delay. In an emergency situation cardiac rhythm may effectively be maintained by an intravenous catheter electrode placed into the right ventricle and connected to an external pacemaker. It is not desirable to use this method for more than 24 to 36 hours because of the possibility of phlebitis, infection and thrombus formation.

Addendum

Since submission of this paper for publication there have been two additional electrode failures. Five weeks after implantation of the pacemaker, patient No. 11 had a recurrence of slow pulse, syncope and convulsions. At operation, a broken wire was found and a new pacemaker inserted. She has had no further symptoms.

Patient No. 4 had failure of his second unit. At re-operation this was thought to be due to very marked scarring at the site of electrode implantation in the myocardium. An entirely new unit was implanted, this time using the right ventricle.

Manufacture of the General Electric units originally used in all patients has been discontinued and replaced by a new model using Silastic covering instead of the Teflon.

(Continued on page 120)

Injection Pain

Effectiveness of Further Purification of Benzathine Penicillin G in Reducing the Pain of Injection

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PREVENTION OF RECURRENT attacks of rheumatic fever utilizing continuous prophylaxis against Group A beta hemolytic streptococci is uniformly accepted. The intramuscular administration of 1,200,000 units of benzathine penicillin G every 28 days is the surest and most reliable method of protection that is available today.¹⁻⁵ Although pain at the site of injection of benzathine penicillin G has rarely been significant enough to warrant changing the route of administration of the prophylactic agent, there is no doubt that this highly insoluble form of penicillin does cause more local discomfort than other forms of depot penicillin. The present investigation was initiated to determine if further purification of the benzathine base of benzathine penicillin G would improve the local tolerance to this preparation.

Method of Study

Ninety-six individuals who had inactive rheumatic fever and had been receiving 1,200,000 units of benzathine penicillin G intramuscularly every 28 days were the subjects of this study. The age of the boys ranged from six to 22 years with a mean of 13; their mean weight was 116 pounds. The age of the girls ranged from six to 21 years with a mean of 15; their mean weight was 112 pounds.

One hundred and ninety-two disposable syringes containing 600,000 units of benzathine penicillin G were supplied to us by the manufacturer; half of these contained commercially available benzathine penicillin G and half the benzathine penicillin G whose benzathine base had been highly purified. Before initiating the study random numbering was placed on each syringe for identification purposes.

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The benzathine penicillin G preparations used in this study were supplied by Dr. Edward F. Roberts, Wyeth Laboratories, Philadelphia, Pa.

Mr. McKenna is a junior student at the University of Kansas School of Medicine. Supported in part by a grant from the Kansas City, Missouri Heart Association and the Pediatric Cardiology Teaching and Developmental Fund of the Children's Cardiac Center.

One syringe of the commercially available benzathine penicillin G was paired with the highly purified base benzathine penicillin G. Each subject was then given 600,000 units in the upper-outer quadrant of each buttock; one buttock received the highly purified preparation and the other buttock the commercially

A double-blind study utilizing 96 quiescent rheumatic subjects was carried out to determine the effectiveness of further purification of the benzathine base in reducing local pain at the site of injection of benzathine penicillin G. No statistical difference in the local tolerance to pain was noted between the two forms of benzathine penicillin G, one containing highly purified benzathine base and the other the commercially available preparation. Because the intramuscular route of administration of benzathine penicillin G is the surest method of prevention of rheumatic recurrences now available further investigations are necessary to determine a means of improved local tolerance to this preparation.

available preparation. Neither the patient nor the nurse giving the injections was cognizant as to which preparation was given in which buttock. The number on the syringe was recorded on a master sheet to be subsequently compared with the sealed code sheet after completion of the study. A questionnaire was then given to the subjects with the following queries:

1. Which shot bothered you most as they were being injected?
2. Which shot bothered you most at bedtime the day the shots were given?
3. Which shot bothered you most when you got up the next morning?
4. Which shot bothered you most upon getting up the second morning following the injections?

5. Did you limp following the injections? If yes, which leg hurt more?

6. As you sat down or pressed on the spots where the shots were given which one bothered you more?

7. Did either of these shots hurt as much as those you have had before?

The questionnaire was returned after two days. When all questionnaires had been received the sealed code sheet was opened and it was determined on the master sheet for each individual which buttock had received the commercial benzathine penicillin G and which the highly purified benzathine base.

Results

The answers to the questions are tabulated as follows:

	Purified Base	Regular BPG	Equal Pain	No Pain	No Answer
1. Shot hurting most on injection	41	49	4	2	0
2. Shot hurting most at bed-time same day as injection	37	38	2	15	4
3. Shot bothering most the next morning	29	41	1	20	5
4. Shot bothering most second morning following injection	22	35	2	26	11
5. Limp following injection	11	14	1	0	3
6. Which shot hurt on pressure	31	47	2	8	8
Totals	171	224	12	71	31
	Yes	No		No	Answer
7. Either shot hurting as much as shots before	45	47		4	

Although the results tend to demonstrate slight favor toward the highly purified benzathine base as being associated with less pain, when these findings are subjected to statistical analysis the proportional difference between the two forms of benzathine penicillin on no question was found to be below the .08 level of significance. Also, the totals of the questions in each category were not significantly different from each other. It is of interest to note that in question 7 there was nearly an equal division between those individuals who thought that one of the 600,000 unit injections was as painful as their previous injections which contained 1,200,000 units of benzathine penicillin G.

Discussion

Numerous studies have been carried out by various investigators in an attempt to reduce painful local reactions to benzathine penicillin G.⁶⁻⁸ Studies by Breese suggested that further purification of the benzathine base used in the manufacture of this drug would significantly lower the incidence and severity of local discomfort. Although the present investigation may appear to corroborate the findings of Breese, statis-

tically significant differences were not found. No apparent difference in pain was witnessed between 600,000 units in a volume of 1 cc. and 1,200,000 units in a delivered volume of 2 cc. Although these were not simultaneously given injections, the reduction of the number of units of penicillin to 600,000 and the volume to 1 cc. was not concomitantly associated by a reduction of local discomfort. In all probability, the increased amount of pain associated with the injection of benzathine penicillin G is related to the heavy crystalline suspension of a relatively insolubility salt base of this depot form of penicillin and the co-existing local irritation which it causes.

A number of different substances have been added to benzathine penicillin G on an investigative basis in an attempt to alter the local reaction. Hyaluronidase seems to increase the local reaction.⁹ The addition of procaine penicillin or 5 mg. prednisolone to each 600,000 units of benzathine penicillin G has been demonstrated to significantly improve local tolerance.⁶⁻⁸ The corticosteroids also delay the early blood absorption of penicillin, but slightly enhance the later absorption such that there is no appreciable effect on urine excretion; urinary corticoid excretion may be temporarily suppressed.^{8,9} The potential objections to the addition of prednisolone to benzathine penicillin G probably contraindicate its routine use in clinical medicine.

References

1. Diehl, A. M., Hamilton, T. R., Keeling, Irene C., and May, J. S.: Long-acting repository penicillin in prophylaxis of recurrent rheumatic fever, *J.A.M.A.* 155:1466, August 21, 1954.
2. Stollerman, G. H., Rusoff, H. H., and Hirschfeld, I.: Prophylaxis against group A streptococci in rheumatic fever (the use of a single monthly injection of benzathine penicillin G), *New Eng. J. Med.* 252:787, 1955.
3. Diehl, A. M., Hamilton, T. R., and May, J. S.: The prevention of rheumatic fever recurrences by the use of repository benzathine penicillin G, *J. Southern Med. Assoc.* 49:250, March, 1956.
4. Morris, A. J., and Rammelkamp, C. H., Jr.: Benzathine penicillin G in the prevention of streptococcal infections, *J.A.M.A.* 165:664, 1957.
5. Diehl, A. M., Petry, E. L., Lauer, R. M., and Hamilton, T. R.: The prevention of recurrence of rheumatic fever, *G. P.* 26:143, September, 1962.
6. McFarland, R. B., Korstonje, M. C., and Seal, J. R.: Amelioration of the local reaction following the injection of benzathine penicillin G. II. Effect of prednisolone, *Antibiotic Medicine and Clinical Therapy*, 5:455, July, 1958.
7. Krugman, S., Ebin, Eva V.: Improved local tolerance to benzathine penicillin G, *Pediatrics* 21:243, February 1958.
8. Breese, B. B., Disney, F. A., and Talpey, W. B.: Improvement in local tolerance and therapeutic effectiveness of benzathine penicillin, *A.M.A.J. of Dis. Child.* 99:149, February, 1960.
9. Roberts, E. F.: Personal communication, Sept., 1962.

The most complete revenge is not to imitate the aggressor.—*Marcus Aurelius*

Experimental Ligation Studies

Serum Enzyme Changes Following Bile and Pancreatic Duct Obstruction

ROBERT T. MANNING, M.D.,¹ WILLIAM A. REED, M.D.,²
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ALTERATION IN SERUM enzyme activity has been utilized to detect pathologic changes in various tissues. Transaminase alterations in myocardial infarction and viral hepatitis and amylase and lipase determinations in acute and chronic pancreatitis are examples in common clinical use.

The long term changes which occur in various

Six dogs were subjected to various surgical procedures obstructing flow in the pancreatic and bile ducts. Changes in serum activity of SGOT, SGPT, AP, LAP, amylase and lipase were measured for varying periods following obstruction. Reconstitution of the biliary system was attempted in two of the dogs and enzyme changes followed. Both dogs became secondarily obstructed by stricture and stones.

serum enzyme activities following bile and pancreatic duct obstruction have not been so well documented. This study was undertaken to evaluate in a longitudinal manner the changes in leucine aminopeptidase (LAP), alkaline phosphatase (AP), glutamic-oxalacetic transaminase (GOT), glutamic-pyruvic transaminase (GPT), amylase and lipase activity in the serum of dogs subsequent to obstruction of the bile and pancreatic ducts and following relief of such obstructions.

Materials and Methods

Mongrel dogs fed Purina Dog Chow were used. Blood samples were drawn before each procedure and daily thereafter except in the first study (Dog 141). Samples were allowed to clot, the serum sep-

arated and frozen until assay. The following techniques were used for the serum enzyme measurements: LAP, Arst, Manning and Delp;¹ SGOT, Sigma, Reitman and Frenkel;² GPT, Sigma, Reitman and Frenkel;² AP, Sigma, Bessey, Lowry and Brack;³ amylase, Sigma;⁴ and lipase, Sigma, Teitz.⁵

All operative procedures were conducted under intravenous nembutal anesthesia. Aseptic technique was maintained with special attention to minimal handling of tissues.

Results

It became apparent early in the course of this study that in the dog the normal serum activities of the enzymes being measured differed from those reported in humans. This was most notable for amylase and leucine amino-peptidase determinations. For this reason, normal values were determined for all six enzymes in twenty healthy mongrel dogs and are tabulated below:

TABLE I

	Mean	S. D.	Range	"Normal" Range ($M \pm 2 S. D.$)
LAP	60	11.7	30-127	35-85
GOT	28	7.8	14.5-78	12-44
GPT	15	7.1	5.0-32.5	1-30
AP	1.59	0.74	0.25-3.45	0.1-3.1
Amylase	1141	195	850-1575	750-1500
Lipase	0.58	0.27	0.3-1.3	0.2-1.1

Common Bile Duct Ligation. (Dog 141). Common duct ligation and transection was carried out February 13, 1961. AP and SGPT showed the noted rise with SGPT falling after six days, while the AP continued to rise. On the 14th postoperative day, an Roux-Y anastomosis of jejunum was made to the gall bladder. This was followed by an immediate drop in all values, but only SGOT returned to normal. Four days later all values again rose and continued to fluctuate until

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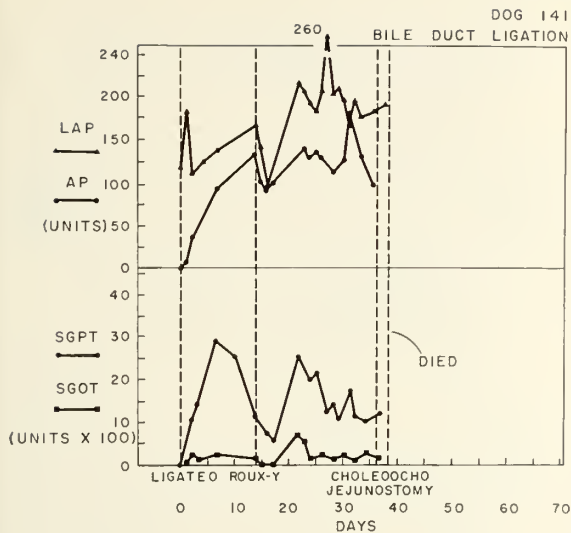


Figure 1. Enzyme Changes (Dog 141).

March 21, 1961, when a second laparotomy was done which revealed that the anastomosis was narrowed and partially occluded by multiple faceted black stones. A choledochojejunostomy was then performed. The animal died the next day and autopsy examination showed scarring and peritonitis in the right upper abdomen. The recently constructed choledochojejunostomy was widely patent and intact. The enzyme changes are summarized in Figure 1.

(Dog 171). Common duct ligation and transection was carried out on April 10, 1961. SGPT, AP, and LAP showed marked elevations with considerable day to day variations.

On May 8, 1961 (day 28) en Roux-Y anastomosis of the proximal common duct and jejunum was performed. This was followed by a decrease in LAP, AP, SGOT and SGPT with the SGOT returning to within normal ranges. LAP subsequently again rose following a transient "spike" in SGPT values followed by rise of the four enzyme values at 54 days. Amylase and lipase changed minimally although the elevations that did occur usually appeared coincident with SGPT rises. The dog was killed on the 64th day and examination revealed the common duct remnant to be dilated and filled with multifaceted black stones. There was a stricture at the site of the anastomosis and the duct contained bile-stained pus. The enzyme changes are summarized in Figure 2.

Hepatic Duct Ligation. (Dog 193). On May 19, 1961 the right hepatic duct was ligated. The enzyme changes are summarized in Figure 3. SGPT, SGOT and AP values rose sharply with only a transient rise in LAP. SGOT returned to normal on day four and remained within normal limits except for one elevation to 45 units on day 23. SGPT remained elevated throughout, although returning towards normal when the experiment was terminated. AP became normal

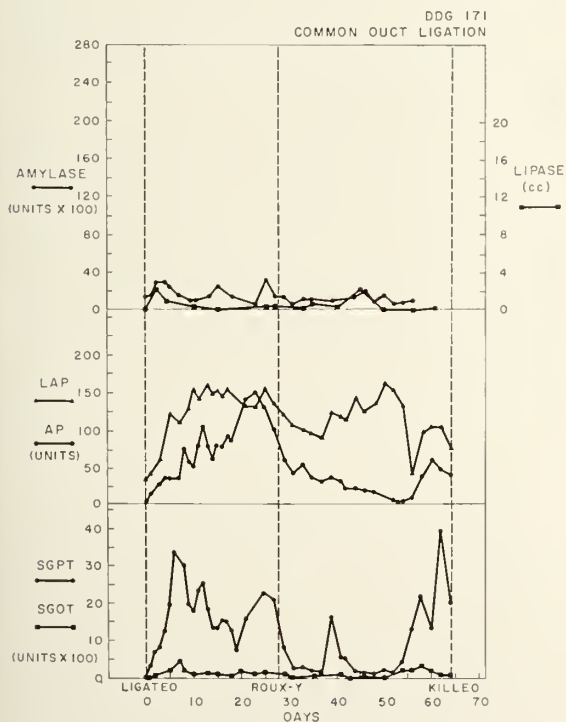


Figure 2. Enzyme Changes (Dog 171).

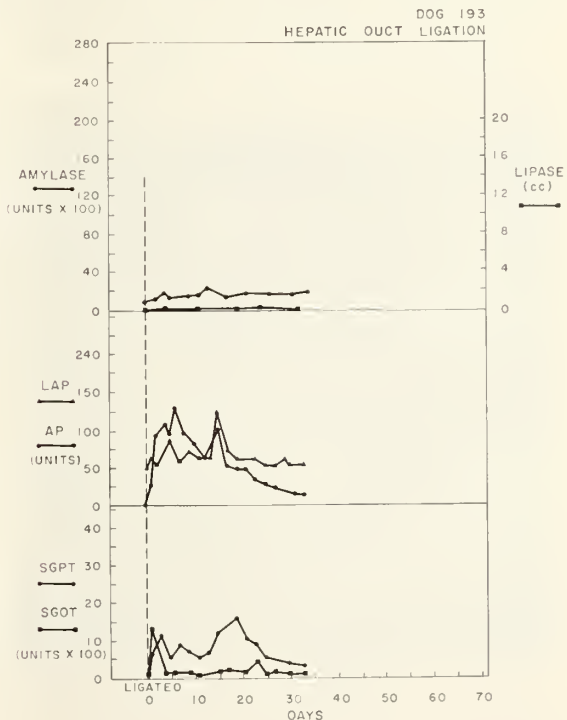


Figure 3. Enzyme Changes (Dog 193).

on day 25 and remained so thereafter. The animal was killed on day 33. Autopsy examination revealed atrophy of the right lobes of the liver and marked hypertrophy of the left lobes. The cystic dilatation of the right hepatic duct proximal to the ligature and atrophy of the right lobes of the liver are shown in *Figure 4*. Microscopic examination from the two lobes of the liver did not reveal remarkable changes on a comparative basis.

Pancreatic Duct Ligation, Partial Common Duct Obstruction. (Dog 152). Ligation of the main pancreatic duct and the accessory pancreatic duct was performed at their point of entrance to the duodenum. A silk suture was passed dorsal to the common duct and the two ends brought up through the abdominal wall and anchored loosely in the skin. Sufficient length was permitted in the loop to avoid common duct obstruction. The enzyme changes are summarized in *Figure 5*. On the tenth postoperative day, the animal was returned to the operating room and the previously placed loop around the common duct was pulled up and tied, thus occluding the structure. The suture was removed on the 17th postoperative day. Note that SGOT returned to normal on day 12, rising again following tightening of the ligature around the common duct. Of interest are the amylase-lipase alterations, particularly the observation that the lipase did not stay elevated longer than amylase values.

The initial rises in SGPT, SGOT, LAP, AP are felt to be due to manipulation of the common duct at surgery and to placement of the ligature (brought out through the skin) since at autopsy the common



Figure 4. Gross Specimen, illustrating severe atrophy of right lobe; arrow points to the right lobe remnant (Dog 193).



Figure 5. Enzyme Changes (Dog 152).

duct was partially obstructed at the site of contact with the suture with proximal dilatation. The pancreas was very firm to palpation, but was not otherwise abnormal. Microscopic examination of the pancreas demonstrated duct dilatation and some intra-lobular fibrous proliferation.

Pancreatic Duct Ligation. (Dog 174). On April 10, 1961 ligatures were placed around the main and accessory pancreatic ducts and tied. The initial procedure was followed by a transient rise in amylase and lipase to comparatively low values. LAP and AP showed small unsustained increases. A second rise in amylase and lipase occurred on day 18 which is unexplained. On the basis of the enzyme changes it was felt that total pancreatic obstruction had not been effected (*Figure 6*). Therefore, on day 28, laparotomy was done and it was found that the ligature for obstruction of the main duct was improperly placed. The main duct was then ligated and transected. Further exploration showed the accessory duct to be totally occluded. Following the second laparotomy values increased except for only a slight rise in SGOT. Again, the lipase rise occurred after and returned to normal before the amylase values. The rise in alkaline phosphatase, the moderate increase in LAP and the "spike," of SGPT values are felt to be due to operative manipulation of the ampulla of Vater and com-

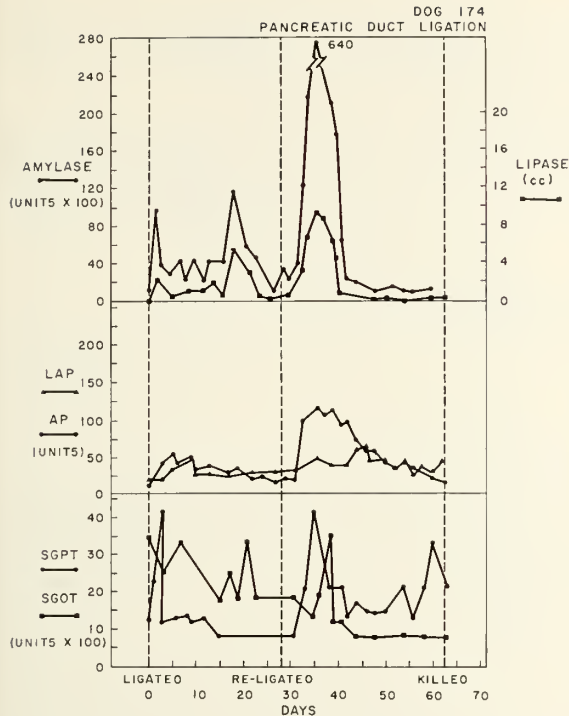


Figure 6. Enzyme Changes (Dog 174).

mon duct which was done to assure ourselves that total pancreatic duct obstruction had been achieved.

The animal was killed on June 12, 1961. Autopsy revealed three pigment stones in the gall bladder. The common duct measured 0.8 centimeters in diameter. A fistula had formed between the transected end of the main pancreatic duct and the duodenum. The pancreatic tissue appeared normal with the exception of moderate fibrosis at the site of prior manipulation.

Common Channel. (Dog 156). On March 16, 1961 a biliary-pancreatic common channel was produced by transduodenal cannulization of the common duct and main pancreatic duct. One end of a 0.2 centimeter internal diameter polyethylene tube was tied in to each duct. The accessory pancreatic duct was ligated, bile was thus shunted directly into the pancreas or pancreatic juice had direct access to the biliary system.

The enzyme changes are noted in Figure 7. The procedure was followed by marked increases in serum activity of all six enzymes. SGOT, LAP, AP and SGPT values continued to show markedly daily fluctuations, never returning to normal. The animal was re-explored on the 25th day at which time the polyethylene tube was removed. The daily fluctuations in LAP, AP and SGPT values continued as before with no significant alterations in amylase, lipase, or SGOT activity. The dog was killed on the 54th day and

autopsy examination revealed a common duct stricture with proximal common duct dilatation and cholelithiasis.

Discussion

Bile Duct Ligation. The studies indicate that biliary tract obstruction is followed by rapid rise in AP and SGPT values with a lesser, but well defined, rise in LAP and SGOT. Amylase and lipase show little variation. These findings are as expected from earlier reports⁶ and confirm our clinical impression that biliary tract obstruction is accompanied by an increase in LAP values. Of additional interest is the persistent SGPT/SGOT ratio greater than one, a finding previously observed predominantly in patients with viral hepatitis.⁷

We were able to predict from the enzyme studies that the dogs with reconstitution procedures following ligation had become subsequently obstructed or that the obstruction had not been totally relieved.

Pancreatic Duct Ligation. As pointed out, the studies indicate (contrary to the clinical impression in patients) that lipase determinations are no better index of an obstruction to the pancreatic duct in the dog than amylase values. There was a mild SGPT rise following the duct ligation and in dog 174 a slight LAP and AP rise which were most likely due to operative manipulation. This point needs further investigation, particularly relative to the rise in LAP since

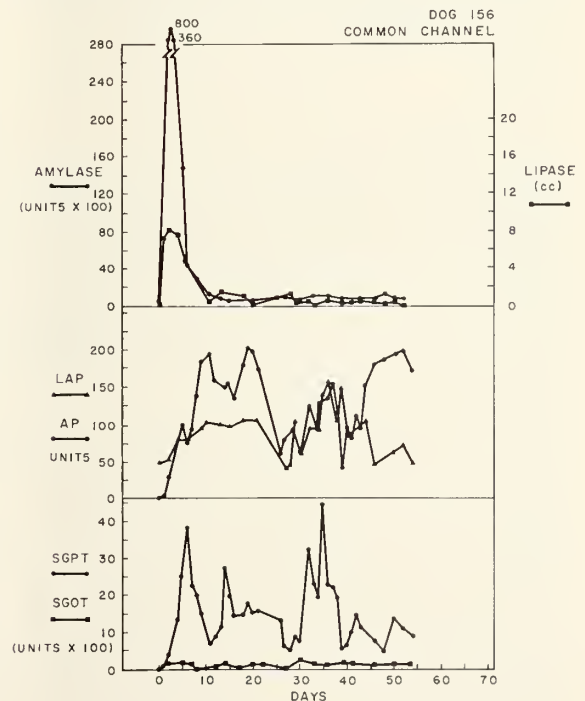


Figure 7. Enzyme Changes (Dog 156).

it has been felt that LAP increases in carcinoma of the pancreas are possibly due to pancreatic duct obstruction.

Hepatic Duct Ligation. Moderate elevations of SGPT and AP occurred followed by a gradual return to normal. This is as expected from previous reports with partial hepatic duct occlusion. Again, the SGPT/SGOT ratio was greater than one and the rise in SGOT was quite transient. The LAP changes were evanescent and probably not significant. The atrophy of the occluded lobe of the liver with contra-lateral hypertrophy is as expected.⁸ The gradual return of all tests to normal suggested that such a phenomenon had occurred.

Common Channel. Biliary obstruction and transient pancreatitis were produced in dog 156. There was an initial rise in amylase and lipase values, but despite the opportunity for continued influx of bile into the pancreas these values returned to normal and remained so. Such bile flow into the pancreas, however, may not occur due to changes in the intraductal pressure relationships incident to the production of this preparation. This agrees with the finding of Anderson *et al.*, and Mann and Giordano. For this experiment SGOT activity was not a good index of liver injury. LAP rises in general conformed in the change of AP except for the last ten days. This variation is not explained. The tube was removed from the duct and it was felt that pancreatic drainage was then adequate while the biliary obstruction persisted due to stricture and infection. SGPT again was a good index of continued hepatic damage.

Summary

Normal values for SGOT, SGPT, LAP, AP, amylase and lipase are reported for the dog.

Six dogs were subjected to various surgical procedures obstructing flow in the pancreatic and bile ducts. Changes in serum activity of SGOT, SGPT, AP, LAP, amylase and lipase were measured for varying periods following obstruction. Reconstitution of the biliary system was attempted in two of the dogs and enzyme changes followed. Both dogs became secondarily obstructed by stricture and stones.

In the dog, SGPT activities seem to be a better index of liver cell injury than SGOT. Although it cannot be definitely stated from this study since an active acute pancreatitis was not produced, it is unlikely that any of the transaminase rises can be attributed to pancreatic injury.

LAP rises in general parallel AP changes and occurred only after bile duct obstruction. Little change of LAP activity was noted in dogs with pancreatic duct obstruction alone.

Amylase and lipase activities increased in a parallel

fashion. Lipase was not a better index of pancreatic injury than amylase and, indeed, returned to normal ranges before amylase values.

References

1. Arst, H. A., Manning, R. T. and Delp, M.: Serum Leucine Aminopeptidase Activity: Findings in Carcinoma of the Pancreas, Pregnancy and Other Disorders. *Am. J. Med. Sci.* 238:598, 1959.
2. Sigma Technical Bulletin. Number 505.
3. Sigma Technical Bulletin. Number 104.
4. Sigma Technical Bulletin. Number 700.
5. Sigma Technical Bulletin. Number 800.
6. Spell, J. P. and Hardy, J. D.: How Reliable Are Liver Function Tests: A Reappraisal in Dogs. *Surg. Forum.* 9:508, 1958.
7. Wroblewski, F.: *Advances in Clinical Chemistry*, Vol. I, edited by A. Sobotka and C. P. Stewart, Academic Press, Inc., p. 314-352, 1958.
8. Rous, P. and Larrimore, L. D.: The Biliary Factor in Liver Lesions. *J. Exp. Med.* 32:249-272, 1920.
9. Anderson, M. C., Mehn, W. H. and Method, H. L.: An Evaluation of the Common Channel as a Factor in Pancreatic or Biliary Disease. *Annals Surgery*, 151(3):379, March, 1960.
10. Mann, F. C. and Giordano, A. S.: The Bile Factor in Pancreatitis. *A.M.A. Arch. Surg.* 6:1, 1923.

Cardiac Rhythm

(Continued from page 113)

References

1. Bellet, S.: *Clinical Disorders of the Heartbeat*, Lea and Febiger, Philadelphia, 1953, p. 152.
2. Chardack, W. M., Gage, A. A., and Greatbatch, W. W.: Correction of Complete Heart Block by a Self-Contained and Subcutaneously Implanted Pacemaker. *Clinical Experience with 15 Patients*, *J. Thor. Cardio. Surgery*, 42:814, 1961.
3. Friedberg, C. K.: *Disease of the Heart*, W. B. Saunders and Co., 2nd Ed., Philadelphia, 1956, p. 328.
4. Kantrowitz, A., Cohen, R., Raillard, H., Schmidt, J. and Feldman, D. S.: The Treatment of Complete Heart Block with an Implanted Controllable Pacemaker, *Surg., Gyn., and Ob.*, 115:415, 1962.
5. Parsonnet, V., Zucker, R. I., Gilbert, L., and Asa, M. M.: An Intracardiac Bipolar Electrode for Interim Treatment of Complete Heart Block, *Am. J. Cardiol.*, 10:298, 1962.
6. Penton, G. B., Miller, H., and Levine, S. A.: Some Clinical Features of Complete Heart Block, *Circulation*, 13:801, 1956.
7. Rowe, J. C., and White, P. D.: Complete Heart Block: A Follow-up Study, *Ann. Int. Med.*, 49:260, 1958.
8. Wood, P.: *Diseases of the Heart and Circulation*, J. P. Lippincott, Philadelphia, Second Ed., 1956, p. 229.

NEW MEMBERS

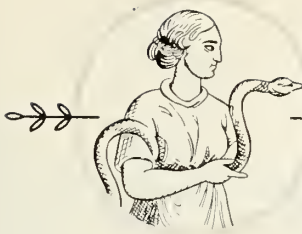
The JOURNAL takes this opportunity to welcome these new members into the Kansas Medical Society.

Victor M. Eddy, M.D.
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Hays, Kansas

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223 N. Main
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2020 Central Avenue
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Medical HISTORY

Dr. Cammann and the Binaural Stethoscope

PHOEBE PECK,* *Kansas City, Kansas*

AUSCULTATION by use of an instrument dates from the day, a century and a half ago, when Laennec listened through a roll of paper to the sounds of the heart. The publication of his book, *De l'auscultation médiate*, in 1819 in Paris revolutionized the study of chest diseases. Although most, if not all, of the great discoveries in auscultation have been made with the monaural stethoscope,¹ the demand for this item has diminished. In fact, a member of one instrument company reports that, in the last 35 years, he knows of only one monaural stethoscope being sold.² It is the binaural stethoscope which is now generally used by physicians in this country and in many of the Continental clinics.

In 1854, Dr. Henry I. Bowditch, a pioneer specialist in diseases of the heart, presented to the Boston Society for Medical Improvement a newly developed instrument, the Camman binaural stethoscope. This instrument, he exclaimed, "*intensifies*, to an extraordinary degree, every sound heard in auscultation."³

The Cammann stethoscope was not, to be sure, the first device of its kind. In 1827, Sir Charles Wheatstone—of Wheatstone's bridge fame—in his "Experiments on audition," pictured a "microphone." This consisted of two plates, one for each ear, with a curved rod or brass wire meeting in a single point (or a plate and rod for one ear), and it was designed to hear sounds when in immediate contact with sonorous bodies.⁴ Not until 1864 was this contrivance associated with medicine. In a footnote (and fine print!) in the sixth edition of his book, *Abhandlung über Perkussion und Auscultation*, Skoda commented that the Wheatstone "microphone" was very complicated and uncomfortable although it was supposed to be capable of hearing important weaker tones.

In 1873, Dr. Charles J. B. Williams, of London, stated that some 30 years earlier (1843) he had made a binaural stethoscope and that he had obtained the

idea from a suggestion made by Nicholas P. Comins of Edinburgh.⁶ According to Dr. Williams' son, his father had as early as 1829 constructed a stethoscope of two lead pipes attached to a trumpet-shaped piece of mahogany.⁷ With no ear-pieces, it was awkward to use. Dr. Williams admitted in his biography that he never used the binaural device.⁸

Around 1850, Marc-Hector Landouzy, of Paris, constructed a polystethoscope having a bell-shaped chest-piece with a number of gum elastic tubes, by

Recent spectacular advances in medicine have overshadowed many modest contributions of the past. Here is an interesting story of the development of our old friend, the stethoscope. What would we do without it?

which several persons could listen at once. A single tube was designed for each person, but it could become binaural by the use of two tubes. This, too, was not practical since it required three hands to use—two to hold the ear-pieces in place and one the chest-piece. Dr. Arthur Leared, of Wexford, Ireland, exhibited in 1851 at the Great International Exhibit in London a binaural stethoscope, which consisted of two gutta-percha tubes attached to the chest-piece at one extremity and at the other to the ear-pieces. Three hands were needed for its employment. Even so, Dr. Williams considered this one much better than his because of the addition of an India-rubber spring.⁹ The same year (1851), Dr. N. B. Marsh, of Cincinnati, patented a double stethoscope. This had a flexible membrane over its working end and two gum elastic tubes leading from it to the ears. This was also inconvenient to handle, and it produced muffled sounds.

Now, Dr. Cammann was familiar with the instru-

* From the Department of the History of Medicine, University of Kansas School of Medicine.

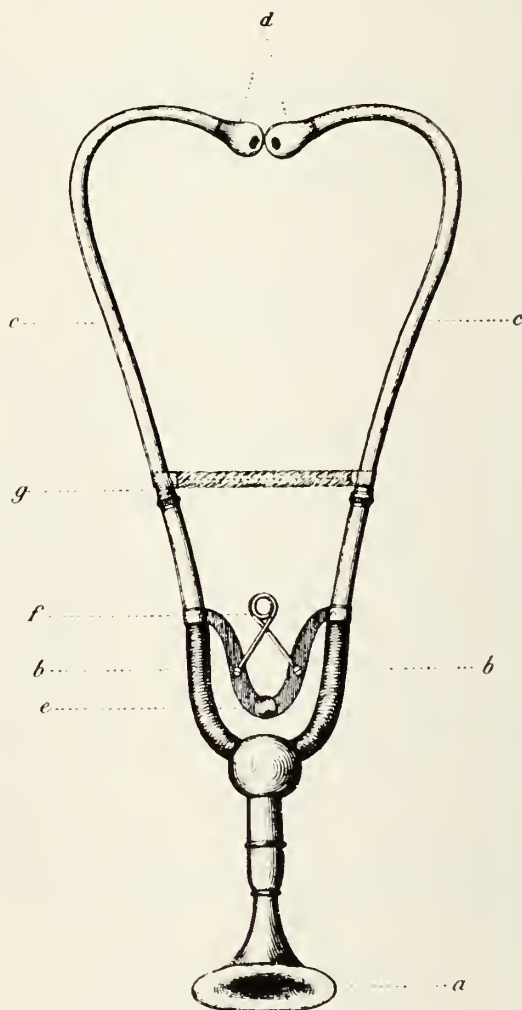
ments of Landouzy and Marsh. Since Marsh had secured a patent, Cammann made certain changes and produced in 1852 with the help of two colleagues, H. W. Brown and C. P. Tucker, his instrument, which he gave freely to the profession.¹⁰

George Phillip Cammann, born in September, 1804, entered the office of Dr. David Hosack of New York in 1826 and obtained his M.D. degree from Rutgers' Medical College in 1828. He then went to Paris, where he attended the clinical lectures of Pierre-C.-A. Louis. Auscultation aroused in the young student an intense enthusiasm. Returning in 1830 to New York, he began practice, and, busy with the subject of cardiac mensuration, he experimented with a variety of stethoscopes. The result was his paper, written with Alonzo Clark and C. L. Mitchell, in 1840 on "A new mode of ascertaining the dimensions, form, and condition of internal organs by percussion."¹¹ The instrument used for this so-called auscultatory percussion, now first made known in America, was a solid cylinder of cedar, six inches in length, with an ear-piece which allowed nearly the whole cylinder to pass through it, sometimes having a truncated wedge at its objective extremity.

At the Northern Dispensary, where he was identified with the Heart and Lungs section, Cammann perfected his binaural stethoscope. Oddly enough, he, himself, never attached his name to the instrument and worked on it as a pastime. Fearing that the ear would lose its delicacy by too frequent use of the two ear-cups, he used it for special occasions only.¹² He devised, in addition, a cardiometer (which somewhat resembled a pocket-knife), to determine accurately the distance of the apex beat from the median line. On February 14, 1863, Dr. Cammann died of a long standing cardiac affliction, of which he was acutely aware. There was no man in the City of New York, it was written, "whose opinion was more highly respected in Pulmonary and Cardiac diseases."¹³

Cammann's double stethoscope was described and pictured (Figure 1) in an editorial in the *New York Medical Times* for January, 1855.¹⁴ This improved stethoscope was of two tubes of German silver, gently curved, with the objective end of ebony. Flexible tubing was between the distal end of the tubes and the chamber. The two tubes of gum elastic and metallic wire were kept in connection by means of a jointed bar with a spiral or elastic spring and a band of elastic material between the bar and ivory knobs, which fitted closely into the ears—a self-adjusting mechanism. The instrument was more than a foot long; whereas, the wooden stethoscope, solid or perforated, was 4 to 12 inches long and the flexible ear trumpet, 2 to 4 feet long. The Cammann stethoscope was first manufactured and sold by Messrs. George Tiemann & Company of New York (Figure 2).

The praises of several contemporary physicians did much to popularize this device in the United States and Great Britain. To supplement Bowditch's recommendation, let us see what three other doctors thought of it. Dr. Scott Alison, of London, an authority on tuberculosis, found it most useful in the early part of the first stage of consumption. He explained that this double stethoscope was better adopted for hearing sounds of respiration than those of the heart. The difficulty was, he cautioned, that sound was obtained from very slight friction of the object end and the body of the patient and, in addition, the



a Objective end. *c* Hinge joint.
b Two gum elastic tubes. *f* Spiral spring.
c Two metallic tubes. *g* Elastic moveable spring.
d Two ivory Knobs at aurial extremities.

Figure 1. Dr. Cammann's stethoscope, $\frac{1}{3}$ size. From *N. Y. Med. Times* IV: plate facing p. 140, 1855.

FIG. 1036.—Cammann's Stethoscope with Snelling's Rubber Bell.

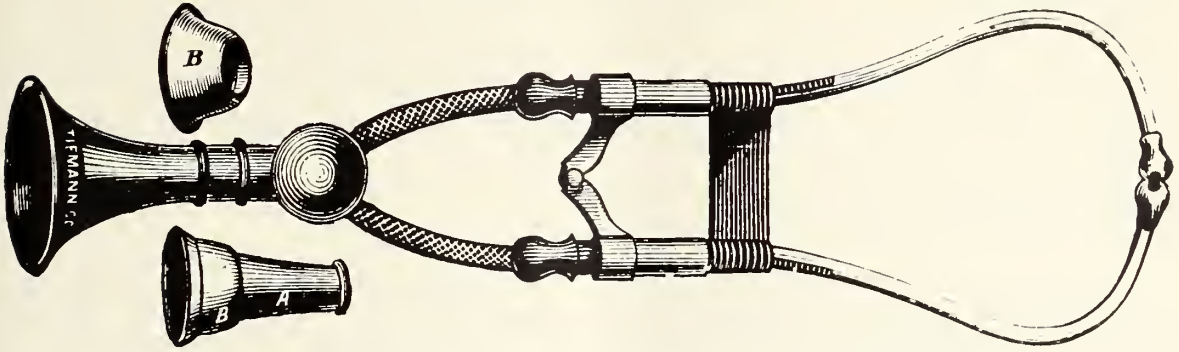


Figure 2. Dr. Cammann's stethoscope, a later model. From Tiemann catalogue, 1889, p. 6.

large cup and ear-knobs gave louder sounds than with the wooden tube.¹⁵

Austin Flint, the "American Laennec," always the student of physical diagnosis, believed that, by the application of the Cammann stethoscope, positive results could be obtained when by former modes of examination the signs were negative. Further, it made auscultation available to those whose sense of hearing was impaired. He wrote that it was difficult to institute comparisons as regards quality and pitch of sound with this instrument and with the ear alone or with a tube. With reference to differences of intensity and rhythm, he asserted that it had a wider application. For comparison of the two sides of the chest in respect to the resonance produced by the act of speaking, he stated firmly that it was exceedingly well adapted. Flint found it necessary to hold the "pectoral extremity" between the fingers, and this

was a source of extraneous sounds to be guarded against and recognized.

In his book on physical diagnosis, Alfred L. Loomis, professor of medicine at the University of New York, in warning that physicians would need practice to become skilled in the use of the Cammann stethoscope, stated that it was almost indispensable for cardiac auscultation and in determining abnormalities of the blood vessels. He strongly recommended it as being superior to all others as it closed both ears to every sound but the desired ones.

As modification of Laennec's single tube took place, so modifications of the binaural stethoscope were made (and are still being made). Interestingly enough, one hundred years ago, Alison, who devised a differential stethoscope modeled on that of Cammann's, did predict, "Although the double stethoscope should be in the hands of every physician

(Continued on page 129)

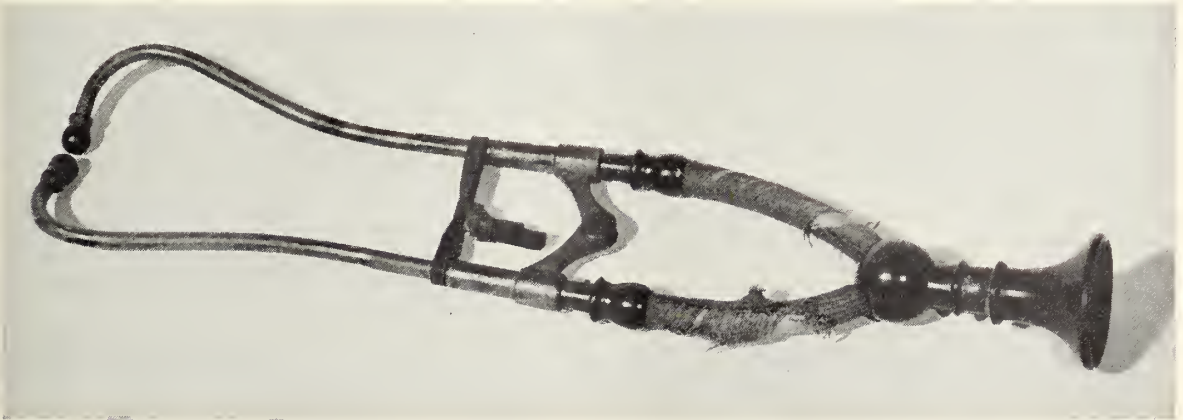


Figure 3. Earliest binaural stethoscope in the History of Medicine Museum, University of Kansas Medical Center. Note the improvised rubber band for the elastic spring. This instrument, resembling Figure 2, was used by Dr. Samuel J. Crumbine, who practiced in Dodge City, Kansas, in the 1890's. He became a member of the State Board of Health, then secretary, and from 1911 to 1919 was the dean of the University of Kansas School of Medicine.

Neurology Comes of Age

The Herrick-Meyer Scientific Papers Initiating a More Rational Approach to Neurology and Psychobiology

PAUL G. ROOFE, Ph.D.,* *Kansas City, Kansas*

FREQUENTLY IN THE HISTORY of science two or more men simultaneously present data bearing upon an important identical segment of the natural order. In the case of the nervous system of vertebrates, two young Americans each published a paper that was destined to change the course of thinking and teaching in the classes of neurology in the medical schools of the western hemisphere. These two papers published at the turn of the century, one by C. Judson Herrick and the other by Adolf Meyer, initiated a more rational approach to the study of neurology (both clinical and non-clinical) and of psychobiology. *The Cranial Nerves of the Bony Fishes* was Professor Herrick's Ph.D. thesis from Columbia University, New York City. This paper attracted considerable attention because it won for its author the coveted \$500 Cartwright Prize of Columbia University. This prize was given every two years by the University alumni for the best essay on medical subjects. It was world wide in scope. Professor Herrick of Denison University was 30 years of age at the time of this announcement June 1, 1899.

Adolf Meyer's paper *Segmental Supra-Segmental Concept: Critical Review of the Data and General Methods and Deductions of Modern Neurology* was published in the 8th volume of the *Journal of Comparative Neurology* 1898 in which Professor Herrick's paper also appeared. Meyer's paper at this time did not attract as much attention as its content deserved. Later, however, it had considerable impact upon psychobiological thinking. In it one finds a clear statement of Meyer's integrative theory and the gist of his psychobiological doctrine. Professor Meyer was 32 years of age at this time, serving on the staff at Clark University, Worcester, Massachusetts.

These two men were to be closely associated for the rest of their lives, chiefly through their editorial duties with the *Journal of Comparative Neurology*.

This paper is primarily concerned with an evaluation of these two papers and their impact upon modern neurological thinking as well as editorially presenting some correspondence between these two scien-

tists concerning such matters. The University of Kansas is now the repository for all of Dr. Herrick's papers, which includes over 25,000 letters to and from correspondents over a period of 70 years.

Both Herrick and Meyer may be classed as members of a small group of American scientists who pioneered in establishing a rational approach to psychobiology. Dr. Herrick's elder brother, C. L. Herrick, founded the *Journal of Comparative Neurology* and was productive in this area. Robert M. Yerkes and

The epochal papers of these two men, published almost simultaneously, has proved to be a turning point in neurology. Correspondence between the two men was carried on over a prolonged period.

George E. Coghill were members of this unique group. Through the writings, teachings and editing these pioneers established firmly the American school of psychobiology. All were associated with the editorial board of the *Journal of Comparative Neurology* at one time or another.

Meyer's approach to psychiatry both in teaching and research was neuro-anatomical in perspective. Both Herrick and Meyer taught that mind and body occupy no separate compartments in the biological framework of the individual. Both emphasized that mind and body work together in terms of the whole. It was their common belief that the end product of this integration is the personality. American biologically oriented psychiatry and neurology have gained considerably from the teachings and research of these two eminent scientists. Meyer worked in the clinical field and Herrick in academic areas. Throughout Meyer's association with the Henry Phipps Psychiatric Clinic (Johns Hopkins University) he gave an elective course in neuroanatomy which was so integrated with the course in psychobiology that it provided a solid foundation for the latter. Beginning as early as 1893 Meyer's offering of neuroanatomy at the University

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of Chicago was of a functional nature. His concept was refreshing and illuminating in contrast with the sterile and often dull presentation of the conventional medical approach to the nervous system with its stress on areas and form without much interest or information in the nature of their functions. The publication of the momentous segmental supra-segmental concept in 1898, as mentioned above, brought to fruition Meyer's basic thinking. This evolutionary presentation placed within the grasp of the medical student a rational approach to the nervous system and its function. As seen by the young medical student the nervous system, as portrayed by Meyer, is not merely a summation of its parts but is a new unity with new functions emerging out of the integration of all its parts. The segmental levels are fixed and inherent, and are not subject to experience. The supra-segmental levels are labile, and are subject to learning. This is the integrative level of symbolization, the highest expression of which is in man. Herrick's paper on the cranial nerves of the bony fishes was followed by many other studies of other fish forms which cleared up many knotty problems of the function of the brain stem.

It was from these studies and with the aid of other colleagues such as Oliver Strong, J. B. Johnston *et al.* that the American school of neurology was born, with Herrick as its recognized leader. His laboratory outline using the physiological components of peripheral nerves and the corresponding longitudinal functional columns in the brainstem became a standard guide for many American neurological laboratories. At first this outline was locally (University of Chicago) duplicated and by 1918 Elizabeth Crosby, principal of Petersburg, Michigan, high school, aided Professor Herrick in publishing *A Laboratory Outline of Neurology*—W. B. Saunders, Publisher. A second edition (reset) appeared in 1920. Elizabeth Crosby (now Emeritus Professor of Anatomy, University of Michigan) later became internationally recognized in the field of comparative neuroanatomy.

Professor Herrick's neurological studies were carried out over the period from 1889 to 1960. From this early concept of physiological components he developed a more profound interpretation of the function of the vertebrate nervous system, culminating in his last book *Evolution of Human Nature*. This treats of the evolution of the nervous system in relation to behavior in which he portrays the analytical and integrative functions which seem to be working in such a way that through their conflict mentation appears.

We are now concerned as to the correspondence between these two contemporaries of the late 19th and the first half of the 20th centuries. The first letter to mention the laboratory outlines of each of these two

men was written by Meyer to Herrick on January 11, 1909. It follows:

My dear Doctor Herrick:

As I am going through the excellent syllabus which I just received, I want to jot down some remarks as they occur to me. In the first place I want to say how pleased I am that you sent it to me so promptly. . . . My first remark is a compliment with reference to the clean-cut arrangement of just what the students should have and should expect.

The first point of discussion concerns the nomenclature. The BNA is a big pill for me to swallow. In the first place I have it in for the long Latin terms for forebrain, midbrain and hindbrain and cord, which are my subdivisions of the neural tube.

The plan of your course is different from mine because it brings in more comparative material for the embryological material which I prefer. The next difference is the insistence on the longitudinal zone and the ruling out of the segmental subdivisions. I still feel that my combined plan might give the student better help.

In the first place he has the segments before him in every person or patient: nose pit, eye socket, jaws, ear complex, and the viscera and then the spinal segments which he can group either according to vertebrae, or as the neck, arm region, thorax, lower extremity region and perineal region. The plan in my paper of 1898 gives this. Then come the longitudinal zones:

(1) The neural crests;

(2) The neural tube:

Ventral median line; ventro-lateral or motor plate; dorso-lateral plate or receiving station, and roof plate.

In some regions we further find the morphological delimitation of the somatic and visceral stripes of the ventro-lateral plate, and of the dorso-lateral plate. Further in the hindbrain and in the forebrain the wing develops supra-segmental organs.

Thus we have to discuss the segments of motor mechanisms, with the superposition of the receptor series; next the intersegmental connections, then the supra-segmental organs with their afferent and efferent paths, and finally the interrelations of the supra-segmental organs. Each of these units has its functional correlate of fundamental clinical importance.

Using the embryology, and the comparative anatomy only for illustration, saves the student of medicine quite a little trouble. I shall send you a copy of my syllabus. I hope to be able to test it on some unspoiled material before long.

I feel rather strongly that your plan appeals too much to the anthropocentric conception of receptive-conscious function, which I do not consider correct. I believe I was one of the first to take a functional view-point, giving Hughlings Jackson's views their just credit. But I prefer, from a morphological view-point and also from a practical functional view-point, to put the emphasis on the motor outfit, as the pragmatic and morphological expression of the essentials of the normal; while the sense organs are perhaps more essential from a psychologizing

view-point and from that of evolution, while they are far less open to accurate experimentation. I can see that both sides deserve being pushed. But for the beginner the motor side has the easier foundation. You object to metameric schemata in the hindbrain. I know that metamerism had better remain a morphological problem. The scheme is I think capable of taking in the detail in perfectly correct form. It may be that I am trying to save too much of what may seem to you a "ueberwundener standpunkt." But I feel as if I could not accept your views without getting into some of your troubles and still keep the advantages which I think adhere to my plan of the brain from the point of view of pragmatic cohesion and utility, an advantage for the student who does not have to shift so often with it.

On page 25 you unite the tactile and temperature paths which seems hazardous. See my case of transverse lesion of the cord, J. of N. & M. Dis. Dec. 1902. . . . Does the stria Lancisii contain fibers from the olfactory bulb? p. 9. I have a case in mind which made me think so in the past; but the lesion may have reached the genu of the callosum. Loewenthal and my own Marchi degenerations in animals speak against it.

Do you think my outlines could be made acceptable to comparative workers? It would be such a boon to have one standard which would do for the morphologist, physiologist and clinician.

My segmental apparatus is what Edinger calls Eigin-apparat. The intersegmental structures and the supra-segmental structures are his Verbindungsapparat.

I shall send you my syllabus as soon as I get it made up for the present course. It will be a great satisfaction to get a rapprochement in the teaching of neurology for physicians at least, and also the teaching for psychologists, and I shall be very glad indeed to get your criticisms.

Very sincerely yours,

ADOLF MEYER

This letter was followed 14 days later by Herrick's long letter of pleasant criticisms.

24 Jan., 1909

My dear Dr. Meyer:

Your good letter of the 11th has remained unanswered so long simply because I have been too busy to give it the careful attention which it merits; not because of lack of interest, I need not assure you. My outline of laboratory work has no great originality, but interpreted in connection with the accompanying lectures the course as a whole has, I think, a character of its own. I agree with you about the BNA, and it has taken me a long time to get my courage up to either using it myself or requiring others to do so. But in previous years I have found that students will pay no attention to it unless they are required to use it in the laboratory. The result is that they are unable to read some of the best modern textbooks. By requiring it in the laboratory they get this advantage and ultimately get the old terms too. Embryo pig material was used for many years in this laboratory. I find the shark really preferable, particularly as most of my students have not yet had the dissection of head

and neck. They get the peripheral relations of sense organs and nerves here reduced to lowest terms and can master all that is necessary in a very few hours. It does no harm to their future human dissection courses to have a little comparative foundation. Under no circumstance would I cut out the shark after several years experience with it. The shark too gives the longitudinal zones of the oblongata in diagrammatical simplicity, so that they can see them by simple inspection of the dissected brain. It also shows the functional transverse regions of your scheme beautifully, all in one dissection. In the outline of shark dissection I have especially emphasized the longitudinal zones because they are so conspicuous; but by no means would I "rule out the segmental subdivisions" as you say. In the human work the transverse sections dominate everything else in the laboratory; but in the lecture room I try to connect them up into functional groups, much as you outline. I think our actual practice here is not far apart. I consider myself very conservative, as compared, e.g. with Johnston, who publishes his laboratory outline (Anat. Record, Nov., 1908) and works on the longitudinal units first, last and all the time. This I think is too extreme, though Johnston assures me that in his hands it works very well with elementary medical classes. I do not think you have quite got my point of view when you say, "your plan appeals too much to the anthropocentric conception of receptive conscious function." The unit I make my starting point is the reflex arc—not the conscious process or any of its mechanism. And I think it bad because untrue to place the emphasis on either the motor or the sensory limb of the reflex arc. The reflex arc is a functional unit and must be kept intact. The beauty of the longitudinal zones of the oblongata is that each of these brings together a definite set of receptors which as a whole has a common type of effector apparatus. Thus the whole rhombencephalon (brachiomeric brain) is seen to have just the sort of unity that your scheme postulates; so also the ophthalmencephalon, the rhinencephalon, etc. I shall look forward to seeing your outlines with interest.

In regard to tactile and temperature paths, I followed here Head's recent work on the spinal cord. That they must be separated somewhere either in the cord or above it is evident. I do not think we have very satisfactory evidence for fibers from the olfactory bulb in the striae Lancisii. Edinger and Elliot Smith, if I remember correctly, give direct fibers in lower mammals. Kölliker says it is indirect only in man, i.e., the path is interrupted in the paraterminal body. . . .

With best regards,

Sincerely yours,

C. JUDSON HERRICK

Many weeks passed before Meyer sent Herrick his laboratory outline.

March 1, 1909

My dear Herrick:

I send you herewith a copy of the outlines for an anatomo-clinical neurology which I hope is the nucleus of something which will develop into some definite

shape and will ultimately constitute part of a fairly complete course of neurology for physicians, in which the physiological and clinical aspects will be represented. I wish very much that you might have time to make your critical comments. I feel rather strongly that the outline as written has many gaps which the course itself makes up for, but to have the chief deficiencies brought home to one by an outside critic is bound to be of great help in focusing one's attention both with regard to the contents and to mode of presentation.

Believe me,

Very sincerely yours,

ADOLF MEYER

[March ? 1909]

My dear Dr. Meyer:

I have gone over your outline with great interest. Our ideals are I think very similar, and it interests me to see how they work out from so diverse points of view as yours and mine. Your outline is admirable in conception and in detail, though there are some points which I would change. For instance, your use of the word segment is puzzling. In some places you seem to mean a metameric unit and in others a general region including many metameres. The discussion on pp. 4, 5 and 6 is sure to arouse the wrath of comparative anatomists and embryologists on account of this confusion. Would it not be better to use the word region instead of segment for your functional groupings, e.g. mastication region? I have always used your 'segments' (regions) as functional units and shall make more use of them in the future after your clear exposition to me last winter of their clinical importance. But this by no means impairs the value of the longitudinal functional systems as fundamental morphological aids, and I would introduce the latter concept very early in the course instead of late as you do after the segmental apparatus (p. 11). These longitudinal units are arranged after a common plan in all parts of the central nervous system except the rostral end.

P. 22. This might be modified somewhat in view of Dogiel's book on the spinal ganglion published last year. PP. 26-27. Winkler has recently shown that the vestibular and cochlear connections in the rabbit (and presumably to a less degree in man) are more similar in anatomical plan than has hitherto been supposed (Proc. section of science, Amsterdam Academy). P. 34. Johnston at Christmas time convinced me by means of some unpublished drawings that the optic vesicles pouch off from the dorso-lateral wall of the neural tube in neuromere 2, and not from the ventro-lateral wall as formerly commonly taught. The cerebral hemispheres are a similar dorso-lat. evagination from the first neuromere. PP. 50 & 51. Do you accept the recent work which would tend to limit the functions of the mesial fillet from the nuclei of the dorsal funiculi to the muscular and somesthetic sense, taking the tactile path up through another path farther laterally (Tschermak, Head etc.)? P. 53.

* Stanley Cobb in his *Foundations of Neuropsychiatry* (1958) uses terms of this nature attached to an only slightly modified original scheme of Meyer.

The general discussion of the reflex arc should come at the very beginning of the course, because on this our whole functional scheme is built up. This you probably have provided for. The discussion of the supra-segmental apparatus is good and I propose to steal this for my own course.

It is a little hard to compare your outline with mine, for yours I infer is a syllabus of a lecture course with demonstrations, while the one I sent you is purely a lab. guide. As I wrote you on the 24 of Jan., my aim of the guide is to give as few facts as possible, but simply to have the things which they are to study in the best order and to refer them to sources of information. They must dig out the facts for themselves. My lectures do not follow the laboratory manual closely but aim to give them points of view and facts not found in the common anatomical text books. In only a few cases do I give them descriptions in the outlines, such as hippocampus, fornix and olfactory paths, where they need all the help they can get; and in the case of the shark brain where they have no good reference books. The quizzing is done in the laboratory on the material and takes the form largely of reports prepared for in advance often by the student upon special topics. Your course I suppose is complete in itself; mine is one of three related courses, for it is followed by a course on the physiology of the nervous system by Dr. Carlson** and later by a clinical course. This makes my course nominally purely anatomical, but of course I introduce as much functional interpretation as possible, though I cannot of course do physiological experiments. The absurd organization of departments in this university makes an effective correlation of these three courses a practicable impossibility, which of course weakens the whole greatly. If I could have my own way I would have given a brief general course, partly anatomical and partly physiological, followed by a series of elective courses in which different phases of the nervous system would be worked up each with a small group of students, so that each student would get a thorough grasp on a few phases of the subject, including the methods of preparation of material and the research method of handling, though of course no actual research could be undertaken in these short courses. I think it would be worth more to the student to be independent in his thinking than to cram the whole field of neurology into his mouth at once (the figure is really expressive of what some of our courses are).

Again I thank you for letting me see your outline, and I assure you that I have got much profit from it.

As ever, Sincerely yours,

C. JUDSON HERRICK

Many years passed before there appeared any exchange of criticism or remarks concerning each other's work. However with each issue of the *Journal of Comparative Neurology* many letters were related to editorial matters. In 1936 Professor Herrick delivered an address before the American Psychiatric Associa-

** A. J. Carlson, Department of Physiology, University of Chicago.

tion meeting in St. Louis. Professor Meyer was also at the speaker's table. The title of the lecture was *Control of Behavior, Its Mechanism and Evolution*. Meyer's praise is best expressed through his letters which follow.

May 18, 1936

My dear Herrick:

I was sorry not to see you again after your address in St. Louis. Your formulations and your estimation of psychiatry stirred me very much, and I should have valued greatly an opportunity to discuss it with you point by point. It is so very important that there should be all possible clearness on what is common ground and on what the diverging emphases might be. I wish you could send me a carbon of your paper so that I might be sure of your words and thoughts and might state what my experience urges me to say. With your wide and deep influence in shaping attitudes in the conjoint fields, I am anxious to understand you fully. I often wished our one-time correspondence could have come to a full and complete mutual understanding. It might have had an influence in shaping the fate of psychiatry at the University of Chicago and beyond it. Your address was such a remarkably concise quintessence of your work and thought that it tempts me to see whether I cannot bring my own conceptions as clearly as possible in line with yours. Dr. Cheney asked me in the midst of your speech to respond and what I said on the spur of the moment expressed more of some of my feelings than either just the appreciation of the Association or a strictly specific response of the psychiatrist to the neurologist. Somehow being a little of both, I should like to get my ideas cleared and to share them for some further clearing and getting together.

Most sincerely yours,

ADOLF MEYER

28 May, 1936

Dear Dr. Meyer:

I delayed reply to your kind letter of 18 May in the hope of having a definite answer to your request for a copy of my St. Louis paper. Unfortunately I have none at the moment available. I gave the carbon in advance to Dr. Cheney for the press (and they doubtless found it rather innutritious); the original I gave to him also afterwards at his request with a view to publication.

I told Dr. Cheney that this was not written with a view to publication and my preference is that it be not published, but if precedent demands this I do not object. I do not know what has been decided about publication. If it not published, the ms. is to be returned to me and I will forward it to you, for I very much desire your critical comments upon it.

I undertook to do two things here (neither of which was appropriate to the occasion—after dinner), and feel that I failed to make myself clear on either the general critique of psychiatry or my own basic concepts of the proper foundation upon which psychiatry must be built. I hope that I was more coherent in the Institute of Medicine Lecture last month, a copy of which I will send you shortly.

Though I sat at your elbow while you were speaking at the St. Louis dinner, I heard nothing of what you said. My hearing is dull and the resonance of the loud-speaker masked your words so that I have no idea what you were saying. This I regret very much and so am the more desirous of having your written comments on my ms., a part of which was omitted in reading.

In the preparation of this paper I supposed that I was building directly on a psycho-biological foundation very close to your own. It may be that either I have misunderstood your position or that I have failed to make my own clear—perhaps some of both. I will send you my ms. as soon as I can get possession of it and I enclose herewith some sheets of a rejected first draft of my paper, rejected because it was too long to leave time for what I really wanted to do. When you have seen my full paper, please let me have your frank comments on it.

Thanking you very much for your interest, and with best wishes,

Cordially yours,

C. JUDSON HERRICK

30 May, 1936

Dear Dr. Meyer:

Much to my surprise I received yesterday the galley proofs of my St. Louis after-dinner paper. The corrected proofs have been forwarded and probably the paper will be published shortly. The original ms. I enclose herewith, and as I wrote you two days ago I shall appreciate your frank comments upon it and also upon the Pasteur Lecture, which is also enclosed.

With renewed good wishes and cordial regards,

Sincerely yours,

C. JUDSON HERRICK

June 9, 1936

Dear Professor Herrick:

I have just finished the first reading of your St. Louis lecture. It is, I feel, a very well organized and telling presentation in which I forget to quite an extent what I felt much more in the setting and through the inter-pollations you made on the occasion. The whole problem is, of course, of the utmost importance and significance for psychiatry and I should like to give it reasonably considered expression. What I did at the time, on the spur of the moment, when I was called upon rather unexpectedly was to make a plea for an effective "side by side" of work of this great human problem from a number of centers of preoccupation which would, like the League of Nations, expect to be most effective by granting to each its core and fringe without premature subordination of any one of them to the domination of another. I was particularly anxious to grant a place to a psychiatry not of mere rule of thumb and not too strongly stamped as infantile or juvenile or as having to wait for the final finish of other branches. Unfortunately, I am a prey to a number of distracting demands, having to make a hasty trip to California, but I intend to give some time this summer to a paraphrase of the main issues of your lecture, trying to do justice to the evidently very carefully considered principles expressed

in a more concise, pointed and telling way than any of the expressions that I have seen from your pen.

I expect to spend the available part of the summer near Cold Spring Harbor and hope to have some time, among the number of other items put off for the occasion, to do some justice to an exchange of ideas.

Sincerely yours,

ADOLF MEYER

An invitation from Adolf Meyer to attend his 70th birthday party and the beginning of his 25th year as director of the Henry Phipps Psychiatry Clinic was received by Herrick some time in mid-February of 1937. Herrick's regret and congratulations appear in the following letter.

23 February, 1937

Dear Doctor Meyer:

I am very sorry that it will be impossible for me to be present with your other friends at the anniversary celebrations of April 16 and 17, and I cannot refrain from sending you my greetings and congratulations.

The outstanding position of the Phipps Clinic is a testimonial to your insight and skill, and this is only one expression of the influence which you have exerted in the renaissance of psychiatry in this country.

My acquaintance with you and your work began vicariously through my older brother before I was mature enough to know what it was all about, and the subsequent intimacy has been one of the most stimulating influences of my life. It is my hope that despite the distance which separates us we may see more of each other hereafter, for we have many interests in common.

With renewed congratulations, best wishes and cordial regards, I remain,

Very sincerely yours,

C. JUDSON HERRICK

It is of interest and of value to us all in retrospect to present the above account related to a small phase of the lives of two great men. This small phase, however, has proven more than a dynamic catalytic agent in the fields of biological psychiatry, psychobiological studies and neurology in all its aspects. Adolf Meyer undoubtedly was one of the foremost leaders of American psychiatry and C. Judson Herrick holds the honor bestowed upon him as the father of the American School of Neuroanatomy.

Medical History

(Continued from page 123)

called upon to see much chest disease, it cannot for a moment be held as likely to supersede ordinary unaural auscultation."¹⁸ Here we must say that Dr. Cammann, in adding important features to the binaural stethoscope (*Figure 3*), gave to the physicians

an instrument without which (in some form) they could scarcely practice today.

Acknowledgments

I wish to thank for their kind assistance Dr. L. R. C. Agnew, Dr. Ralph H. Major, and Dr. Don Carlos Peete—all of the University of Kansas Medical Center, Kansas City, Kansas; and Dr. E. Grey Dimond, of the Scripps Clinic and Research Foundation, La Jolla, California.

References

1. Major, Ralph H. and Delp, Mahlon H.: Physical diagnosis. Philadelphia and London, W. B. Saunders Co., 6th ed., 1962, p. 131. illus.
2. Brown, J. H., of George Tiemann & Co., Long Island, New York. Personal communication, April 16, 1962.
3. Double, self-adjusting stethoscope. Morland, Extracts from Society for Medical Improvement. *Amer. J. Med. Sc.*, n.s., 28:85, 1854.
4. Wheatstone, Sir Charles, The scientific papers of. Published by The Physical Society of London. London, Taylor and Francis, 1879, pp. 32-33. illus.
5. Skoda, Joseph: Abhandlung über Perkussion und Auskultation. Sechste, theilweise umgearbeitete und vermehrte Auflage. Wien, L. W. Seidel & Sohn, 1864, pp. 43-44 (footnote).
6. Sheldon, Paul B. and Doe, Janet: The development of the stethoscope, an exhibition. *Bull. N. Y. Acad. Med.*, 11:608-626, 1935. illus.
7. Williams, C. Theodore: Laennec and the evolution of the stethoscope. *Brit. Med. J.* II:6-8, 1907. illus.
8. Williams, Charles J. B.: Memoirs of life and work. London, Smith, Elder & Co., 1854, p. 49 (footnote).
9. Williams, Charles J. B.: *ibid.*
10. Cammann, D. M.: An historical sketch of the stethoscope. *N. Y. Med. J.* XLIII:465-466, 1886.
11. Cammann, G. P. and Clark A.: A new mode of ascertaining the dimensions, form, and condition of internal organs by percussion. *N. Y. J. Med. and Surg.* III:62-96, 1840. 2 plates.
12. Leaming, James R.: Memoir of George P. Cammann, M.D. Read before the N. Y. Acad. Med., Oct. 21, 1863. Boston, E. P. Dutton & Co., 1864. With this is bound: Cammann, Henry J. Memoir of George P. Cammann. Read before the Alumni Assoc. of Columbia College, N. Y., 1863. 38 p.
13. Cammann, George Phillip: Obituary. *Med. Register of the City of N. Y.* 18:216-218, 1863.
14. Self-adjusting stethoscope of Dr. Cammann (Ed.). *N. Y. Med. Times* IV:140-142, 1855. plate.
15. Alison, Somerville Scott: The physical examination of the chest in pulmonary consumption and its intercurrent diseases. London, John Churchill, 1861, pp. 323-325. illus.
16. Flint, Austin: Physical exploration and diagnosis of diseases affecting the respiratory organs. Philadelphia, Blanchard and Lea, 1856, pp. 130-131.
17. Loomis, Alfred L.: Lessons in physical diagnosis. 3d ed., rev. and enl. New York, William Wood, 1876, pp. 33, 204. illus.
18. Alison: *op cit.*, p. 325.

General

Brown, Lawrason: The story of clinical pulmonary tuberculosis. Baltimore, Williams & Wilkins, 1941, pp. 358-362. Cammann, Donald M.: Stethoscopes. In: A reference handbook of the medical sciences . . . VII:458-460, 1904. illus.

Rappaport, Maurice B. and Sprague, Howard B.: Physiologic and physical laws that govern auscultation . . . *Amer. Heart J.* 21:257-318, 1941. illus.

The President's Message

DEAR DOCTOR:

The Kansas legislature is considering many things of interest to the medical profession at this session. As you know our interest involves the development of statutes which will be of benefit to the people of our state. These statutes include the changes so necessary in a coroner's law, the development of an adequate program for the MAA division of the Kerr-Mills law, increased regulation as far as safety on our highways, the possible changes in the basic science law, and the development of a "Good Samaritan" law.

These items are before committees as we go to press. Some decisions may have been reached by the time this is published. We will welcome support from the membership in the final days of the legislature in implementing these programs.



Norton L. Francis M.D.

President



Editorial COMMENT



The Society and Blue Shield were asked before a legislative committee to discuss whether there was unnecessary hospitalization and, if so, who was responsible. This resulted in an exploration with perhaps a new thought or two given to several interested laymen.

The committee appeared to hold two tenets: first, that a physician was in collusion with the administrator to keep the hospital filled, and second, that he disliked to make home calls. It seems they had not considered:

—That the word “unnecessary” is relative in its application here. The home environment of the patient, his approach to illness, his ability to follow instructions and many other things could make hospitalization necessary for one and not needed for another person with comparable conditions.

—That hospitalization will usually result in better care, closer observance, skilled nursing, controlled medication and diet, regardless of how devoted home attention might be, so the question is removed from the area of quality.

—That, in truth, this is a problem of economics. So the decision rests with the physician as to whether hospital service for an individual patient outweighs hospital cost for that individual patient. When he carries insurance, the element of economics is not as personally apparent and of somewhat less immediate importance.

—That this factor is not in the mind of the physician alone, but his patient is well aware of the premiums he has paid to the insurance company. He has bought his right to hospital care in illness and is determined to collect the benefit he already paid for.

—That there is recognized overusage in hospitals according to the strict adherence of a scientific evaluation of absolute necessity. The usage committees of many Kansas hospitals which have studied this problem estimate two and one-half per cent to be the

average. Exceptional instances of prolonged periods of hospitalization can be corrected, and are, by the professional staffs. The problem of the admission for short stay of a patient who might not need hospital services is not as readily identified. But, here also the medical profession is not only interested but becoming more effective.

—That, in its final analysis, this is a problem of human nature. The pre-payment principle is the best means, so far discovered, to enable the public to budget its health care cost. However, as long as such methods make it possible for an individual to “select” against the insurance company, as long as there is overusage, insurance costs will rise beyond the normal increase of actual hospital costs.

—And finally, that the principle of deductibles so thoroughly established in other forms of personal liability insurance will need to be adapted to health insurance if this problem is to be readily solved. It is not primarily a medical problem. It is a simple bit of human nature no law can regulate out of existence. Only when illness can no longer be turned to profit any more than a property fire can be turned to profit, will the real source of this problem be curtailed.

Tuberculosis Testing

(The following is a statement of policy concerning the use of mobile equipment operated by the State Board of Health in tuberculosis case-finding surveys.
—Editor)

Once again a change in the policy for conduction of photofluorographic surveys has been found necessary. Fifteen years ago a state-wide case-finding program was initiated. Mobile x-ray units have toured the entire state since 1948 and have been instrumental in the discovery of many cases of tuberculosis and

some other chest pathology not previously suspected.

We now find ourselves continuing a tuberculosis *case-finding program* but paying too little attention to the *control program*. Nearly 3,000 citizens of Kansas, once reported to the State Board of Health as having pulmonary tuberculosis have, since the diagnosis was made, become inactive cases with either negative sputum or x-ray evidence of stabilized pulmonary pathology.

Surveillance of these former patients has not been pursued and some of them may well have again become active cases capable of communicating their disease to others (2 per cent of the inactive cases do revert to active cases within a five year period). We must know the current status of the disease in all of these, if tuberculosis is to be controlled.

In order to accomplish this Public Health Responsibility, and remain within our budget, beginning July 1, 1963, the case-finding activity will be curtailed by placing one of our two mobile x-ray units in storage and utilizing the funds thus made available to employ field staff to ascertain the present medical status of individuals once afflicted with communicable tuberculosis.

The mobile x-ray unit still functioning will be utilized in those counties where the severity of tuberculosis, as determined by rates per 100,000 population for morbidity, mortality and cases carried on our State Register, indicates that case finding should continue. The thirty-eight Kansas counties that rank highest in severity have been determined and the medical profession in these counties will be offered the service of this State Board of Health facility.

It is estimated that this one unit, operating 11 months per year, can cover these 38 counties in two years of continuous activity. Should one of these counties have a lessened severity, or should one of the other 67 counties have an increase in the local severity, shifts to the eligible counties will be arranged.

Tuberculin skin testing might be considered as an initial county-wide screening program and, if the number of positive reactors is found to be of sufficient number, a State Board of Health Mobile Unit could be made available for the x-ray follow-up phase of the case-finding program. Tuberculin testing material will be available from the State Board of Health.

King-Anderson Again

President Kennedy outlined his social security proposal for health care of the aged in his message to Congress February 21. On the same day, Representative Cecil King (D., Calif.) introduced the Administration bill in the House (H.R. 3920) and Senator Clinton P. Anderson (D., N.M.,) brought it before

the Senate (S. 880). Basically, the proposal is similar to the Anderson-Javits bill which was rejected by the Senate last year.

Under the plan, the beneficiary would have three options as far as hospitalization is concerned. (1) He could take 90 days of hospitalization subject to a \$10 a day deductible for the first nine days, or at least \$20, or (2) Up to 180 days of hospitalization with the patient paying the first 2½ days of average cost, or (3) 45 days of hospitalization without a deductible. The bill would also provide 180 days of nursing home care after transfer from a hospital; all costs above the first \$20 for hospital outpatient diagnostic services; and 240 home health care visits in a calendar year.

The new Administration proposal differs from last year's Anderson-Javits bill in two ways: (a) It would provide benefits through general revenue to those aged who are not under social security; (b) The "option" to use private carriers has not been included.

As in previous Administration proposals, the bill would increase social security taxes for employed persons by ½ per cent (¼ per cent employee, ¼ employer) and raise the tax base from \$4,800 to \$5,200. Mr. Kennedy said the health care program would cost \$5.6 billion for the first four years. This would average out to \$1.4 billion per year. Calculations by the AMA's Department of Economic Research set the first year cost of the program in 1965 at about \$2.3 billion. The Department also calculated that at least 31 states would pay more in social security and general taxes than they could anticipate in benefits returned per aged individual. The Administration claims the bill would mean a social security tax increase of \$13 a year for each worker. Actually, for those earning \$5,200 a year, the tax increase would be \$27.50 annually.

In commenting on the President's proposal, Dr. George M. Fister, AMA President, declared: "There is no fundamental difference between this latest Administration scheme of health care for the aged and others which have been rejected in past sessions of Congress." He said it would force increased taxes on wage earners and employers to buy limited health care for millions of people over 65 who are financially able to take care of themselves. Dr. Fister pointed out that it was inconsistent for the Administration to propose a Tax Cut Bill and, at the same time, recommend a social security tax increase which would affect the overwhelming majority of taxpayers.

In his aged care message, the President covered 36 points. He acknowledged that the Kerr-Mills law has a role to play in the health problems of the elderly. But, he argued that it covers "only a small percentage

(Continued on page 140)



Along The BOOKSHELF

Stormont Medical Library

RECENT ACQUISITIONS

- Burn, Harold. Drugs, medicines and man. Scribners, 1962.
- Yearbook. Yearbook of medicine. (1962-63) Yearbook, 1962.
- Dubos, Rene. Mirage of health. Harper & Bros., 1959.
- Ciba Foundation. Immunoassay of hormones. Little, Brown, 1962.
- Ciba Foundation. Pulmonary structure and function. Little, Brown, 1962.
- Dubos, Rene. The dreams of reason, science & utopias. Columbia U. Pr., 1962.
- Wilson, Wyman, et al. Practical crown & bridge prosthodontics. McGraw-Hill, 1962.
- Saunders, W. B. Medical clinics of North America. Saunders, 1962.
- De Palma, Anthony. Clinical orthopaedics V. No. 24. Lippincott, 1962.
- O'Donoghue, Don. Treatment of athletic injuries. Saunders, 1962.

MONOGRAPHS AVAILABLE IN THE LIBRARY

Dermatology (con't)

- Baer, Rudolf, et al., ed. Yearbook of dermatology, 1961-1962. Yearbook, 1962.
- Behrman, H. The scalp in health and disease. Mosby, 1952.

Genito-Urinary System

- Braasch, William. Clinical urography; an atlas and textbook of roentgenologic diagnosis. Saunders, 1951.
- Campbell, M. Urology, 3 vol. Saunders, 1954.
- Stirling, William. Aortography. E. & S. Livingstone, 1957.

- Scott, William, Ed. Yearbook of urology, 1961-62. Yearbook, 1962.
- Ciba Foundation. Symposium on the kidney. Little, Brown, 1954.
- Ciba Foundation. Symposium on renal biopsy: clinical and pathological significance. Little, Brown, 1961.
- Colby, F. Pyelonephritis. Williams & Wilkins, 1961.
- White, A. Clinical disturbance of renal function. Saunders, 1961.
- Dolger, H. How to live with diabetes. Norton, 1958.
- Duncan, G. A modern pilgrim's progress for diabetics. Saunders, 1956.
- Joslin, Elliott. Diabetic manual for the patient, 10th ed. Lea & Febiger, 1959.
- Joslin, Elliott. Treatment of diabetes mellitus, 10th ed. Lea & Febiger, 1959.
- Kuhn, Robert. New hope for stroke victims. Appleton-Century-Crofts, 1961.
- Strachan, Clarice. The diabetic's cookbook. Medical Arts Pub. Found., 1955.
- U. S. Public Health Service. Diabetes program guide. U. S. Dept. of Health, Education & Welfare, 1956.

Announcement: Stormont Medical Library now has facilities to furnish Xerox service, upon request, at 5c per page.

Books and periodicals will be sent anywhere in the state. You pay only the postage, four cents for the first pound and one cent for each additional pound. Address requests to:

**Mrs. Betty Culley, Librarian
Stormont Medical Library
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Telephone: CEntral 5-0011, ext. 297**



Book REVIEWS

CORRELATIVE NEUROANATOMY AND FUNCTIONAL NEUROLOGY, By Joseph G. Chusid, M.D., and Joseph J. McDonald, M.D., Lange Medical Publications, Los Altos, California, 1962. 384 pages illustrated, \$5.50.

It is difficult to review a book which represents such a mixture of good and bad features.

It is much too complex, too extensive and too detailed for the beginner in Neurology or for the physician who is seeking a quick answer to some immediate clinical problem. On the other hand, it is too sketchy and too condensed for the specialist or the physician who is interested in obtaining information regarding a particular aspect of the vast field of Neurology.

For the latter, there are many specialized textbooks and, more important, many journals that are much more useful.

I can still remember the usefulness of one of the early editions of this book when it consisted of the truly basic principles of correlation between structure and function and how extremely useful it was for medical students. The addition of material has not improved this book, on the contrary, it is this reviewer's opinion that it detracts from it considerably.

One particularly objectionable feature is the authors' detailed descriptions of the various eponymic syndromes of vascular disease of the brain stem. In this day of recognition of the various syndromes of vascular insufficiency, retaining these minutely detailed anatomic localizations is no longer in line with observed fact. The same criticism applies to some of the eponymic syndromes of spinal fluid abnormality, the special reflexes which are really of academic rather than of practical value, etc.

On the other hand, there are some portions of this volume which are extremely worthwhile and highly recommended. These include the classifications of cerebrovascular diseases and of headache, the exam-

ination of the young child, the methods for testing individual muscles, the short section on electromyography, the section of cystometry.

In summary, even though this book still contains the original features that made it so valuable some years ago, it has now been overburdened and as a result has lost a great deal of its usefulness.—C.M.P.

A STUDY OF PSYCHOPHYSICAL METHODS FOR RELIEF OF CHILDBIRTH PAIN—C. Lee Buxton, M.D., Published by W. B. Saunders Company, 1962. 116 pages, \$4.75.

This is a treatise by a distinguished obstetrician who personally visited over thirty clinics using different methods of training for relief of pain in childbirth. It contains a great amount of diverse material available, to my knowledge, in no other single source.

Dr. Buxton records the programs pursued in the clinics of eight European nations and the United States. He relates the factors (eg. exercises) that these proponents believe make their programs effective. He freely notes his conclusions from personal observations.

The material is organized by such chapters as "Pain," "Pavlovian Condition Reflex Methods for Painless Childbirth," "Hypnosis," etc., wherein the techniques of specific clinics are discussed. Of course, a wide spectrum of training and expectations exists. Thus one's predetermined concepts are likely to be met by one or other of the clinics.

Though, as Dr. Buxton states, the greatest disadvantage may be the time required on the part of the obstetric team. The reviewer believes it behooves all who deliver babies to have a reasonable knowledge of the methods and purported results of psychophysical programs for childbirth. This volume makes the basic information more easily available.—W.R.R.



Personalities—IN KANSAS MEDICINE

Karl A. Youngstrom, Prairie Village, was made a fellow of the American College of Radiology at the group's annual meeting in Chicago in February.

Medical staff officers of the Providence hospital in Kansas City were installed at the annual dinner-meeting held in January. **Thomas V. Batty** was elected and installed as president of the medical staff. Other officers installed included **J. B. Pretz**, president-elect; **R. J. Rettenmaier**, vice-president; **L. M. Culp**, secretary; and **Danuta Oktaweic**, treasurer.

Edmond de St. Felix, Wichita, has resigned as director of the Wichita-Sedgwick County Mental Health Clinic. Dr. St. Felix plans to enter private practice in partnership with two Wichita psychiatrists.

Several new county health officers were appointed during recent months. Appointed health officers for their respective counties were: **Donald A. Bitzer**, Washington, Washington county; **E. A. Moorhead**, Neodesha, Wilson county; **F. N. White**, Russell, Russell county; **R. M. Thomas**, Marysville, Marshall county; and **J. G. Swails**, Wathena, Doniphan county. Dr. Swails was also elected county coroner last November.

James M. Mott, Topeka, announced his retirement effective the last of February. Dr. Mott has been practicing medicine for over 40 years and has served as director of the Division of Preventable Diseases of the State Board of Health since 1951.

Harry R. Custer was elected chief of staff of St. Thomas hospital, Colby, at the staff meeting in January.

The superintendent of the Parsons State Hospital

and Training Center, **Howard V. Bair**, has been appointed to an advisory committee of the National Institute of Mental Health. He attended a meeting of the committee in Washington, D. C., in January.

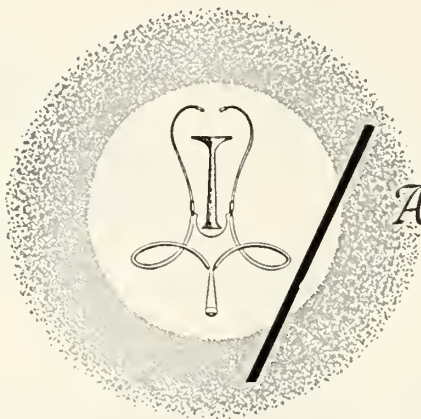
Wayne G. Parker terminated his practice in Hoxie the first of February to join **C. M. Nelson**, **J. H. Coffman** and **K. E. Bickford** of Oberlin in the clinic there.

"Mental Health Problems of Unwed Mothers" was the subject of a seminar for ministers sponsored by the Wichita-Sedgwick County Association for Mental Health in February. Among the speakers on the agenda were **Rosemary B. Harvey** and **Charles McCoy**, both of Wichita.

H. G. Whittington, Lawrence, and **George Zubowichz**, Osawatomie, presented an after-care program at the University of Kansas Medical Center in January. They met with representatives of health and welfare agencies from Wyandotte, Johnson and Leavenworth counties to discuss the problems of caring for persons after their release from state hospitals. The objective of the meeting was to develop a state-wide after-care program.

The staff of the St. Joseph's hospital, Concordia, elected **Charles G. Foster** as president at the annual meeting held in January. **Paul L. Nelson** was elected vice president and **John H. Lathrop**, secretary.

Dr. and Mrs. C. D. Kosar, Concordia, traveled to Miami Beach, Florida, in February, where Dr. Kosar attended a medical symposium conducted by the College of Medicine of the University of Florida. From Miami Beach they flew to San Juan, Puerto Rico, where they visited their son.



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the Doctor's Calendar. Notice of the session is posted in advance to allow the physician time to make preparations.

MARCH

- Mar. 16-21 15th Annual Teaching Seminar, International Academy of Proctology, Las Vegas. Contact: Jacob Reichert, M.D., Phoenix, Ariz.
- Mar. 18 Hospital Workshop Program, Kansas City Southwest Clinical Society, 3036 Gillham Road, Kansas City 8, Mo. Guest speaker: Edward R. Annis, M.D., president-elect of the A.M.A.
- Mar. 18-21 1963 American Industrial Health Conference, Washington, D. C.
- Mar. 24-29 American College of Allergist graduate instructional course and 19th Annual Congress, New York City. Contact: John D. Gillaspie, M.D., 2141 Fourteenth St., Boulder, Colo.
- Mar. 28-30 *Pulmonary Insufficiency* presented by the University of Oklahoma School of Medicine, Oklahoma Tuberculosis Assn., and the Oklahoma Thoracic Society. Contact: Robert Byrd, M.D., University of Oklahoma School of Medicine, Oklahoma City, Okla.
- Mar. 29-30 Annual Midwest Cancer Conference, Wichita. Papers will be presented by medical educators and specialists, including I. S. Ravdin, M.D., president of the American Cancer Society. Approximately 10 hours of Category II credit will be allowed by the American Academy of General Practice for attendance at the meeting. Contact: American Cancer Society, Kansas Div., Inc., 824 Tyler St., Topeka, Kan.

APRIL

- Apr. 1-4 *Perspectives in Medicine*—15th Annual Scientific Assembly of the American Academy of General Practice, Chicago. Contact: William R. DeLay, American Academy of General Practice, Volker

- Blvd. at Brookside, Kansas City 12, Mo.
- Apr. 1-5 36th Annual Spring Congress in Ophthalmology and Otolaryngology, Roanoke. Contact: Superintendent, P. O. Box 1789, Roanoke, Va.
- Apr. 1-5 44th Annual Session, American College of Physicians, Denver. Contact: Edward C. Rosenow, Jr., M.D., 4200 Pine St., Philadelphia, Pa.
- Apr. 21-22 *Otorhinolaryngology*—American Laryngology Association, Hollywood, Florida. Contact: Lyman G. Richards, M.D., 12 Clovelly Road, Wellesley Hills 81, Mass.
- Apr. 21-23 Southwest Allergy Forum, San Antonio. Contact: Boen Swinny, Jr., M.D., 2-G Medical Professional Building, San Antonio 12, Tex.
- Apr. 21-24 *Obstetrics and Gynecology*—American College of Obstetricians and Gynecologists, New York City. Contact: Craig W. Muckle, M.D., 79 W. Monroe St., Chicago, Ill.
- Apr. 22-27 15th Annual Meeting, Southwestern Surgical Congress, and First Mexican-North American Surgical Congress, Mexico City. Contact: R. B. Howard, M.D., 301 Pasteur Bldg., Oklahoma City, Okla.
- Apr. 29-May 1 Annual Meeting of the Kansas Medical Society, Marymount College, Salina, Kan.
- Apr. 29-May 4 Oral and clinical examination (Part II) for candidates to the American Board of Obstetrics and Gynecology, Chicago. Contact: Robert L. Faulkner, M.D., 2105 Adelbert Road, Cleveland, Ohio.

POSTGRADUATE COURSES

- Mar. 18-19 *Pediatrics*—University of Kansas School of Medicine, Rainbow Blvd. at 39th St., Kansas City 12, Kan.

(Continued on page 140)



Blue Shield

Blue Shield's Senior Citizen Plan

Kansas Blue Shield's Senior Citizen Plan is now effective for over 3,000 Kansas residents who enrolled during the initial membership campaign ending January 31. The new plan is the Kansas version of the joint AMA-National Association of Blue Shield Plans' effort to develop an answer to nationwide needs for a medical-surgical prepayment program specifically designed for persons who have previously been unable to secure adequate health care benefits because of age.

In its total aspect the Senior Citizen Plan provides the aged with the availability of both Blue Shield and Blue Cross benefits. In Kansas, the Blue Shield part of the program is the outgrowth of action at last May's Annual Meeting of the House of Delegates where a resolution was passed which approved the proposed plan in principle and directed Blue Shield to negotiate allowances with the Committee on Fee Schedules. As a result of this action and subsequent meetings with the Fee Committee, the specific benefits and provisions of the plan were designed and made available to the public during a two month initial enrollment period during December, 1962, and January, 1963.

Enrollment Provisions

Beginning effective dates were set for January 1 or February 1, 1963, depending upon the date of an applicant's enrollment. Efforts were aimed at enrolling only persons over 60 who were presently ineligible for any form of standard Kansas Blue Cross-Blue Shield membership. Pre-existing health conditions are covered; however, there is a six months' waiting period for any condition for which the member received care during the 90-day period immediately preceding the effective date of membership. There are some limitations applicable to members who are confined to a hospital or nursing home during the

waiting period and these limitations are removed after the member has been continuously free from confinement for three months.

Blue Shield Benefits

Blue Shield benefits include the following:

- Surgery*, in or out of the hospital
- Anesthesia*, on time basis for any eligible surgery
- Radiation Therapy (incl. x-ray, radium, or isotopes)*, for both malignant and non-malignant conditions, either in or out of hospital
- Diagnostic X-Ray or Isotope Examinations*, for both illness and accidental injury, either in or out of hospital
- In-Hospital Medical Care*, 70 days per admission except for nervous or mental disorders, which are limited to 30 days per contract year
- Intensive Medical Care in hospital*, up to \$100 by Blue Shield Review Committee special consideration
- Weekly Physician Visits to member confined in an approved Skilled Nursing Facility*, one visit per week up to 20 weeks per admission. At present, a Skilled Nursing Facility is interpreted as the geriatric wing or non-acute care unit of a hospital. A list of these facilities is being prepared for distribution.

The Schedule of Allowances was developed by use of the Kansas Relative Value Schedule through the cooperative efforts of the Kansas Medical Society's Committee on Fee Schedules and Blue Shield. Although a standard generalization is not possible, in most cases allowances tend to lie somewhere between Schedule 1 and 2 payments. Medical care allowances include coverage of first and last days. Weekly visits

to a member in a Skilled Nursing Facility are compensated on the same schedule as hospital visits.

All Senior Citizen Plan members will have the diagnostic x-ray benefits built into their program. Extended Benefit Riders, Major Medical, or similar forms of extended coverage are not provided with the Senior Citizen Plan.

Manuals, including fee schedules for the most frequently performed procedures have been mailed to Participating Physicians.

Senior Citizen Plan Service Benefits

The Senior Citizen Plan was designed as a service benefit program and was so approved by the House of Delegates. Blue Shield Participating Physicians are asked to grant "service benefits" (accept Blue Shield allowances for eligible services as payment in full) according to two conditions: (1) That the member has no duplicating health insurance that would pay in addition to Blue Cross-Blue Shield, (2) That the member's income for the last taxable year prior to services be \$4,000 or less in the case of family membership and \$2,500 or less in the case of single membership.

Blue Cross Benefits

The companion Blue Cross plan is arranged on a 75/25 per cent co-insurance basis with Blue Cross providing 75 per cent of hospital costs for semi-private rooms and ancillary services. Private room compensation will consist of 75 per cent of the cost

of local average semi-private accommodations toward private room charges. Benefits will be available for 70 days per admission except for nervous and mental limitations of 30 days per contract year.

For each day of eligible hospital care available but unused, Blue Cross will make available either two days of Approved Skilled Nursing Facility care at 75 per cent of cost or two home visits by a visiting nurse at full charge. Visiting nurses will be recognized as those participating in a program operating under the auspices of an Agency with which Blue Cross has a specific agreement for Visiting Nurse services.

The Cost

The combined Blue Cross-Blue Shield Senior Citizen Plans carry a cost of \$13.70 per month for single members and \$23.60 monthly for family enrollments. Of these amounts, the Blue Shield portion of the program accounts for \$3.20 of single and \$6.10 of family rates.

The plan was actuarially rated to be self sustaining as far as possible, and the result was relatively high membership dues. It might be suggested that greater enrollment progress would have resulted from a lower cost program. However, a plan with lower rates would have resulted in a benefit arrangement which would have proved inadequate to the needs of both the aged and the providers of medical care.

Both Blue Shield and Blue Cross have felt that the plans developed reflect prepayment's best initial attempts to provide the benefits that appear needed by the older population segments.

SALINA

104th Annual Convention

April 29-May 1, 1963

Maternal Mortality

The patient, a 32-year-old gravida IV, para III, died in a small but well-equipped hospital in a medium sized community. Death was attributed to "peritonitis, five days, following cesarean section with perforation of the ileum." A living eight pound, five ounce infant was delivered at the time of the section. An autopsy was performed on the patient.

The prenatal course was normal, and her care was good. At the time of admission to the hospital she was in labor with ten-minute contractions, three cm. dilatation and good general condition. Examination revealed, however, a transverse lie with a hand presenting and membranes ruptured. After consultation, a cesarean section was performed without apparent complication, the patient receiving 5 per cent glucose in water during the procedure. The operation was performed in the evening, and the first postoperative night was uneventful.

A cough was noted on the first day for which penicillin was prescribed. Otherwise, the day was not remarkable. On the second day, the patient was noted to be sicker with weakness and fatigue. Urine output was noted to be 100 cc. Temperature was 99.6 degrees, and routine blood count disclosed a hematocrit of 48 per cent and a white count of 53,600. Pulse rate was 120. On the second day, the physician examined the patient and felt her condition was adequate to permit him to leave town, turning her care over to another physician. However, during the day she was noted to be nauseated and distended, and the urinary output was 175 cc. The patient was not able to get out of bed, though she had been up earlier. The pulse rate was still 120.

On the fourth day the patient had an output of 150 cc. and also vomited 150 cc. of greenish fluid. Distention was marked and became more so during the day. She was able to be up for a time but took fluids poorly. On the fifth day the abdomen was reported as soft, and she was taking liquids well. Pulse rate was 110. In the afternoon she began to complain of severe gas pains requiring morphine for control. Two enemas were given without relief. Initially cold, clammy and pale, she became cyanotic and oxygen was started. A liter of 5 per cent glucose in water with Solu-Cortef, 100 mgm., was administered intravenously. The blood count revealed hemoglobin, 18.2 gms. and white count 10,500.

The pulse became weak and blood pressure and heart tones were unobtainable. Consultation was obtained after about two hours and a Levine tube was inserted with recovery of a large amount of foul-smelling liquid. However, the patient expired shortly thereafter.

Formal report of the autopsy was not made, the pathologist communicating personally with the physicians. It was his opinion that a perforation of the bowel might have been made at surgery; he was uncertain inasmuch as he had entered the bowel with his initial incision at autopsy.

COMMITTEE OPINION: The committee noted that a continuing high pulse rate, evidence of dehydration (high hematocrit, relative increase in hemoglobin and low urinary output) and a white count of 53,600 were warnings of trouble rather than a condition permitting the physician to leave town. Continuing distention should have been indication for decompression rather than continuance of liquids by mouth. Confirmation of the ileus might well have been shown by abdominal x-rays. The correlation between the nursing notes and physician's orders would indicate that he relied on the former rather than personal evaluation of unusual postoperative symptoms.

This case emphasizes the fact that cesarean section is proper and justifiable solution in certain obstetric emergencies but can produce unforeseen complications under relatively satisfactory circumstances. Its choice as a procedure and its execution can never be taken lightly. The possibility of infection is always present when the membranes have been ruptured prior to surgery. The course of this case could have been changed with more astute evaluation of the condition and more vigorous management of the distention, fluid deficiency and infection.

CLASSIFICATION: Maternal death, direct obstetric, avoidable.

NOMINATING COMMITTEE

A meeting of the Nominating Committee was held at the Jayhawk Hotel, Topeka on Sunday, February 17, 1963, beginning at 12:00 Noon. Present were Dr. M. C. Eddy, Chairman, and Drs. C. M. Barnes, O. W. Davidson, C. W. Miller and H. N. Tihen. Also available to the Committee for answer to specific questions was Mr. Oliver E. Ebel.

The Committee submits the following list of possible candidates for the consideration of the House of Delegates:

President-Elect

J. C. Mitchell, M.D., Salina. Born in 1913. Graduated from Kansas University School of Medicine in 1938. Has held various offices and has served as councilor.

First Vice President

G. E. Burket, Jr., M.D., Kingman. Born in 1912. Graduated from Kansas University School of Medicine in 1937. Has held various offices and was chairman of Society committees.

Second Vice President

G. F. Gsell, M.D., Wichita. Born in 1907. Graduated from Rush Medical College in 1933. Has served as councilor and AMA Delegate.

J. A. McClure, M.D., Topeka. Born in 1918. Graduated from Kansas University School of Medicine in 1944. Has served as councilor and chairman of Society committees.

J. L. Morgan, M.D., Emporia. Born in 1915. Graduated from University of Pennsylvania School of Medicine in 1940. Has been councilor and chairman of committees.

Secretary

Leland Speer, M.D., Kansas City, Kansas. Born in 1912. Graduated from Kansas University School of Medicine in 1936. Is currently serving as Secretary.

Treasurer

J. L. Lattimore, M.D., Topeka. Born in 1894. Graduated from Fort Worth School of Medicine in 1918. Is currently serving as Treasurer.

AMA Delegate

C. W. Miller, M.D., Wichita. Born in 1909. Graduated from University of Louisville School of Medicine in 1936. Is past president of the Society.

Alternate AMA Delegate

W. J. Reals, M.D., Wichita. Born in 1920. Graduated from Creighton University School of Medicine in 1945. Is currently serving as Alternate AMA Delegate.

King-Anderson Again

(Continued from page 132)

of those aged who need medical care" because Kerr-Mills' MAA had been enacted in 25 states. Actually, 28 states and three territories have enacted MAA legislation and 35 states, three territories and the District of Columbia have improved or enlarged Old Age Assistance plans under Kerr-Mills. Kennedy called for improving OAA medical care standards to match MAA benefits. He also urged elimination of the 42-day OAA limitation of general hospital care for mental and tubercular patients.

Announcements

(Continued from page 136)

- | | |
|---------------|---|
| Mar. 18-30 | <i>Laryngology and Bronchoesophagology</i> —Dept. of Otolaryngology, University of Illinois School of Medicine, 1853 W. Polk, Chicago, Ill. |
| Mar. 27-29 | <i>Cardiology</i> —Symposium sponsored by American Heart Assn. and the Dept. of Medicine, Emory University School of Medicine, Atlanta. Contact: Dept. of Postgraduate Education, Emory University School of Medicine, Atlanta, Ga. |
| Apr. 8-10 | <i>Otorhinolaryngology</i> —University of Kansas School of Medicine. |
| Apr. 10-12 | <i>Ophthalmology</i> —University of Kansas School of Medicine. |
| Apr. 15-17 | <i>The Theory and Practice of Auscultation</i> —Hahnemann Medical College and Hospital, Philadelphia. Contact: Bernard L. Segal, M.D., Hahnemann Medical College and Hospital, 230 N. Broad St., Philadelphia 2, Pa. |
| Apr. 16 | <i>Venous Disorders of the Extremities</i> —Northwest Missouri chapter of the Academy of General Practice and the University of Kansas School of Medicine. Contact: John P. Mabrey, M.D., Plattsburg, Mo. |
| Apr. 22-24 | <i>Anesthesiology</i> —University of Kansas School of Medicine. |
| Apr. 24-27 | <i>Trauma</i> —The Chicago Committee on Trauma of the American College of Surgeons. Contact: John J. Fahey, M.D., 1791 Howard St., Chicago, Ill. |
| Apr. 29-May 3 | <i>The Medical Care of the Adolescent</i> —Harvard Medical School. Contact: Asst. Dean, Courses for Graduates, Harvard Medical School, Boston 15, Mass. |

KANSAS STATE BOARD OF HEALTH

TOPEKA, KANSAS

Division of Preventable Diseases—Division of Vital Statistics—Kansas Morbidity Incidence
 Summary of Cases Reported in November 1962 and 1961
 And Cumulative Totals for the First Eleven Months of 1962 and 1961

<i>Disease</i>	<i>November</i>			<i>January to November Inclusive</i>		
	1962	1961	<i>5-Year Median 1957-1961</i>	1962	1961	<i>5-Year Median 1957-1961</i>
Amebiasis	40	5	1	84	40	42
Aseptic meningitis	1	4	*	34	13	*
Brucellosis	8	3	3	22	46	61
Cancer	278	464	473	3,882	4,017	4,785
Diphtheria	1	—	—	1	—	2
Encephalitis, infectious	1	2	3	23	27	38
Gonorrhea	138	217	217	2,089	2,590	1,942
Hepatitis, infectious	16	55	15	410	696	247
Meningococcal, meningitis	1	1	1	14	14	14
Pertussis	2	4	7	39	25	66
Poliomyelitis	—	—	2	—	8	34
Rheumatic fever	—	—	—	10	4	3
Salmonellosis	24	3	*	324	69	*
Scarlet fever	20	61	24	455	947	522
Shigellosis	14	7	5	66	134	23
Streptococcal infections	109	187	6	1,174	1,335	493
Syphilis	82	75	123	1,072	1,128	1,301
Tinea capitis	5	8	18	125	114	192
Tuberculosis	18	24	24	242	263	338
Tularemia	4	1	1	13	14	28
Typhoid fever	—	—	—	—	3	4

* Statistics on 5-Year Median not available

**RECOMMENDATIONS OF THE SPECIAL ADVISORY COMMITTEE ON ORAL
 POLIOMYELITIS VACCINE TO THE SURGEON GENERAL,
 PUBLIC HEALTH SERVICE, DECEMBER 18, 1962**

(1) That community plans for immunization be encouraged, using all three types; and, (2) that immunization be emphasized for children in whom the danger of naturally occurring poliomyelitis is greatest and who serve as the natural source of poliomyelitis infection in the community. Because the need for immunization diminishes with advancing age and because potential risks of vaccine are believed by some to exist in adults, especially above the age of

30, vaccination should be used for adults only with the full recognition of its very small risk. Vaccination is especially recommended for those adults who are at higher risk of naturally occurring disease; for example, parents of young children, pregnant women, persons in epidemic situations and those planning foreign travel.

Of greatest importance is the continuing vaccination of oncoming generations.—Morbidity and Mortality Weekly Report.

The Kansas Medical Society—1962-1963

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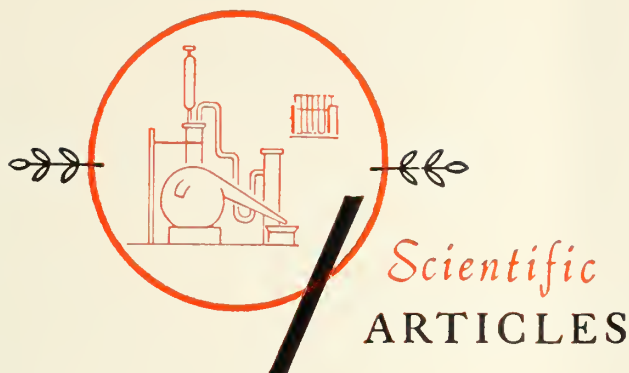
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Treatment of Brain Tumors

Radiation Therapy of Brain Tumors Supplementing Surgery: Our 25 Years Experience

GALEN M. TICE, M.D.,* *Kansas City, Kansas*

MALIGNANT TUMOR of the brain requires careful evaluation by the neurosurgeon, radiologist and pathologist in making the diagnosis, planning the therapeutic attack and evaluating the final results. The surgeon has the initial and greatest responsibility. It is his problem to make the diagnosis. He is aided by the radiologist in studying the brain by special radiographic and occasionally isotopic procedures. Eventually, the pathologist contributes the final information. After diagnosis the neurosurgeon's problems are complicated by the necessity of doing surgery in a limited field where he must move with meticulous care in handling vital structures.

The neurosurgeon hopes to remove the tumor, but often he can only remove a bit of tissue for biopsy. The radiotherapist then takes over. His goal is to completely destroy malignant tissue without damage to the normal structures. Over the years the radiologist has attempted to improve his results by acquiring more efficient radiation therapy apparatus, improving on localization of the tumor, doing research into the affect of prolongation of the treatment, and constant re-evaluation of the safe dosage. In our personal experience we have progressed from the use of 140 KvP in 1930, to

200 KvP, then to 250 KvP, and more recently to CO_{60} radiation. During this 30-year period we have learned more about the tolerance of the normal cord and brain to ionizing radiation. We have learned that certain tumors behave differently from other tumors (e.g. medulloblastoma as compared to spongi-

From May 1932 to January 1, 1957, we have treated 161 cases of malignant brain tumors. With the exception of brain stem tumors and a few cases in which it was not deemed advisable to get a biopsy because of danger to the patient's life, we have pathological data to substantiate the diagnosis of brain tumor.

oblastoma), and must be treated accordingly. The drama of surgery in the treatment of a brain tumor is not inherent in radiation therapy. The procedure consists of daily placing the patient in a predetermined position on the radiation table for a specified amount of radiation. As simple as this may seem it is a procedure to be supervised by a trained radiologist. Certain routine steps are necessary when a radiologist assumes the responsibility for the treat-

* From the Department of Radiology, University of Kansas Medical Center. Presented at the Rocky Mountain Radiological Society, August, 1961.

ment of a brain tumor. An accurate report from the pathologist with his evaluation of the possibility that ionizing rays will inhibit growth or destroy the tumor is necessary. The radiologist must learn from the surgeon the location, extent of involvement of brain by the tumor and the amount of tumor removed or left behind. Planning therapy will depend upon the radiologist's judgement of normal brain tolerance and tumor dosage required to attain the maximum tumor destruction possible for a particular type of tumor. There is no virtue in destroying the tumor and leaving a mental cripple because of injudicious application of radiation. On the other hand, the conscientious radiologist takes a calculated risk based on his experience and that of other radiologists. He extends the tumor dosage to the highest possible level consistent with safety to normal tissues. After deciding on the amount, the radiologist must determine at what rate it should be given for best results. He has learned through experience that 5,000 or 6,000 r can be given safely in six weeks, but not in two or three weeks. To accomplish the delivery of the desired dosage requires distribution through various entrance portals. With Cobalt as the radiation source, most brain tumors may now be treated with rotation therapy. After the various decisions related to treatment planning have been made, therapy becomes an uninteresting procedure of treating the patient every day, or five or six times a week following the predetermined plan.

In some cases we are not surprised at the rapid clinical response to radiation; because of the nature of the tumor it is to be expected. The medulloblastoma is an example of the tumor in which rapid regression is normal. In many cases we are surprised if there is evidence of improvement during treatment. In fact, we are surprised in some cases if there is ever any response. In these cases our payoff comes months or years later when the patient who was considered hopeless visits us with no clinical evidence of disease or radiation sequelae.

Because a high percentage of brain tumors are rapidly growing, cellular tumors that are far advanced before they are diagnosed, we must accept the fact that no matter how carefully the radiologist and surgeon function, the case will not survive. We recognize the fact that, considering all types of malignancies, the prognosis will depend very largely on the life history of the tumor. We know in many cases that the patient is doomed to die soon, regardless of the quality of surgery, radiation or chemotherapy used. We know that a certain number of brain tumors are slow growing, localized and readily accessible to surgical removal. These cases are cured by the surgeon. Decompression by the surgeon may relieve symptoms and prolong life in others. In certain cases, because of this variation in cellularity and lo-

calization, it is most difficult for the surgeon and radiologist to evaluate the benefit derived from surgery or radiation.

Nature of Malignant Tumor

Astrocytoma is a tumor that has a life history of slow growth. It may occur any place in the brain. In children it is a common cerebellar tumor, and it must be differentiated from the commonly occurring medulloblastoma. Clinically, it may occasionally "seed" in other portions of the cerebrospinal system, as does medulloblastoma. The astrocytoma often forms smooth-walled cysts about whose borders the tumor may grow. Surgical removal or drainage of a large cyst may often relieve increased pressure. Evaluation of response of this tumor to radiation is most difficult because of the slow growth and because of the possibility of complete removal by the neurosurgeon.

In our series of brain tumors we have had 37 cases of astrocytomas. Of this number, 27 died prior to five years. The average duration of life following irradiation was 2.05 years. Three lived beyond the five-year period to die 5.4, 6.0, and 6.5 years after therapy. Ten cases are still living for time intervals ranging from five to 29 years. In this group we have 35 per cent five-year survival.

Glioblastoma is a wildly invasive, vascular tumor that usually defies surgical removal. It tends to undergo central necrosis with formation of ragged cysts. The surgeon's problem is complicated by hemorrhage due to extreme vascularity. The average duration of life from onset of symptoms has been recorded by Peirce, Carelton and Bouchard as 12 months. After surgery and radiation they report 47.9 per cent survival for 12 months or more. This pathological process is one in which the life history of the tumor is more important than the treatment. Twenty-seven cases with the diagnosis of glioblastoma have been referred for radiation therapy. We have lost contact with three who are listed as dead. Two of this group, one dead and one living, passed the five-year mark. One died at 8.2 years with tumor and one is still alive after 16 years. The average life duration for those dead (not counting the one who lived for 8.2 years) is 0.6 years. Our five-year survival is 7 per cent.

Astroblastoma is considered by some to be closely related to glioblastoma multiforme. We have treated five cases in this group. Four are dead and one is living at 17 years since surgery and radiation.

Spongioblastoma is a slow growing tumor quite commonly found along the brain stem. It often involves cranial nerves. Fourteen were treated in this group. Two died at 6.8 and 7.5 years, which results for statistical analysis in 14 per cent five-year survival.

Oligodendroglioma is a firm tumor usually found in the cerebral hemisphere. It tends to degenerate

with formation of calcium deposits. It grows slowly, which contributes to a longer survival rate than is seen in some of the infiltrating tumors. We have treated seven of these cases after surgery. Six lived an average of 1.5 years. One is still living after five years. The average five-year survival is 14 per cent.

Ependymoma and ependymoblastoma grow in the wall of the lateral ventricle. They are considered slow growing, relatively benign tumors and may obstruct the ventricle in children. These tumors have a tendency to implant cells in the canal and other portions of the ventricular system. They should receive postoperative treatment, if for no other reason than this tendency to "seed." We have treated four ependymomas. Two lived beyond five years. One is still living and one died at 5.9 years. This is a 50 per cent five-year survival. The average length of life of the three who died was 2.4 years.

We have treated one plasmocytoma who died at 1.7 years. One pinealoma was operated with biopsy proof of tumor; she is still living six years later.

Hemangioblastoma is considered by some to be rare. We have treated seven after surgery. One is lost to follow-up and is listed as dead, making a total of five dead. One of those now dead lived six years. Our five-year survival is 43 per cent. The two living have survived 11 and 15 years respectively.

It is difficult to know how much benefit is derived from radiation treatment of meningiomas. They usually are adequately handled by surgery. Occasionally the surgeon feels that tumor is still present after surgery. These are referred for radiation. We have treated seven cases postoperatively. We lost contact with one case at 7.5 years, and we are following one who has lived for 14 years. Our five-year survival is 29 per cent.

Brain stem tumors are most difficult to evaluate. The tumor is so located that it is seldom possible to prove the diagnosis with a biopsy. In most instances surgery would result in serious nerve damage that could be incompatible with life. As a result, the neurologist and neurosurgeon must make their diagnosis from symptoms and signs. The only therapy available is radiation. These tumors require a relatively high dose of absorbed radiation for prophylaxis or cure. Tolerance of the cord and brain stem is limited. If the patient shows response to radiation, there is the tendency to wonder if a wrong diagnosis had been made, since there is usually no biopsy proof of tumor. We recently treated a patient who was seen eight years ago in a recognized medical clinic where she was diagnosed "residue of Bell's palsy." She did not show improvement over the years and finally was seen by a neurosurgeon who diagnosed brain stem tumor and courageously got a biopsy. This was reported as astrocytoma. Obviously, we must raise the question of a missed diagnosis when first seen.

Assuming that this is true, her symptoms stayed about the same over a period of eight years. This case is of value in showing the slowness of growth of the astrocytoma. This slow growth undoubtedly accounts for some of our five-year survivals after therapy. We have treated 22 brain stem tumors for a five-year evaluation. These cases were not biopsied. Five of these are still living for a period of five to 11 years. Our five-year survival figure is 23 per cent. The average length of those who died was 1.6 years.

Medulloblastoma is a tumor that is seen primarily in children. It arises in the posterior fossa and is characterized by symptoms related to obstruction of the ventricles. It is classified by all who work with it as a highly malignant tumor. These tumors are seen infrequently in older individuals.⁶ In the literature various authorities¹⁻⁴ view with pessimism the possibility of saving the life of a child with this tumor. In our report in 1950⁷ we had no five-year survivors. In this general survey of brain tumors treated up to 1957, we find that out of 20 cases treated we have six cases that have been followed for seven years or more without recurrence and with possible stigmata of radiation damage in one. In our experience we can report a 30 per cent five-year survival. One patient with a cerebellar sarcoma has lived eight years. In such a case, the pathologist must differentiate this from medulloblastoma.

A few cases in addition to the brain stem tumors were not biopsied. Six of these were so hopeless when first seen that it was felt any surgical procedure would endanger the patient's life. They were given radiation without biopsy. The average survival time was 0.7 years. A case of cystic epidermoid tumor of the hypophyseal stalk received radiation following surgery with a five-year survival. An optic nerve tumor was operated, but because of the location it was not biopsied. The patient was told that because of the location she could expect blindness soon. Following radiation she is still living and has her vision 18 years later (*Case 2*). Another case had a large intraventricular tumor which was explored but not biopsied because of danger to life. She is living 15 years later, following radiation therapy (*Case 4*), and is in good health.

Case Reports

In giving the following case reports, we are not trying to show striking results after radiation, but rather, attempting to show variation in response to therapy.

Case 1

L. B., H 90549—108028, May 7, 1941, age 8

CC: Headache, vomiting, convulsions.

HPI: Symptoms date back three months.

Physical: Optic discs blurred.

X-ray: Evidence of increased pressure.

Surgery: The right cerebellar hemisphere was split. At a depth of $\frac{1}{2}$ cm a capsule was encountered which was split and a tumor wall was found in the cyst, the tumor wall being from 2 to 5 mm thick. In the inferior lateral portion of the wall there was a nodule about 1 cm in diameter. It was well demarcated from the cerebellar tissue and was stripped out readily with the finger. In this area the tumor tissue was removed by electrocoagulation and blunt dissection. As nearly as could be told all of the tissue was taken out.

Pathology: 5-1291-49 Cystic astrocytoma of the cerebellum.

Radiation therapy: May 26, 1941 to June 13, 1941. Estimated 3,000 r depth dose.

READMITTED: September 15, 1942. Acute Polio.

Follow up: July 31, 1961. She has residual paralysis from polio, otherwise her health is good.

21-Year Follow Up

Certainly in this case it can be doubted if radiation contributed much, if anything, to the patient's survival.

Case 2

Phyllis T., H 114071—H 55-6714, female, white, age 10, June 23, 1944

CC: Gradual progressive loss of vision for three months, excess urination.

Physical: Clinical impression at first was pituitary tumor.

X-ray: The sella is small.

Surgery: "On elevating the frontal lobe to expose the optic nerves and chiasma, a bulbous enlargement of the right optic nerve and chiasma was seen. The mass extended into the left optic nerve also but this nerve was not so well visualized. The mass extends back into optic radiation area and is probably the portion of the mass compressing the hypothalamus to produce diabetes insipidus. The tumor of the optic nerve and chiasma was pale and gelatinous in appearance, somewhat translucent. *No biopsy was taken* as I did not want to take a chance of destroying any vision remaining." Teachnor.

The patient was told that complete blindness could well be expected and that if this occurred indicating tumor growth, the tumor could then be removed. In the meantime radiation therapy was advised.

Radiotherapy: About 2,000 r was given to the tumor from July 11, 1944 to November 8, 1944 in two short series.

Follow up: She has been treated as a pituitary dwarf.

Eye examination recently:

Left eye 20/25.

Right eye 20/200.

Fundi right and left show primary type optic atrophy.

18-Year Follow Up

Case 3

Betty P., H 127559, female, age 14, December 30, 1945.

CC: Headache and vomiting. Duration at intervals for three years.

Physical: General examination normal findings, except bilateral papilloedema.

X-ray: Diffuse calcification in left occipital area—2 cm in diameter.

Surgery: An infiltrating tumor was found in the left occipital lobe. It was approximately three-fourths removed.

Radiation: May 8, 1946 to May 31, 1946. 3,000 r tumor dose.

Pathology: "(January 15, 1946) Hemangioblastoma of the brain, cerebral cortex occipital lobe. The appearance is highly suggestive of ependymoma, however the nests of vascular spaces, particularly well defined capillaries appear to be sufficient to indicate the diagnosis of hemangioblastoma; with the calcification this resembles an oligodendroglioma."

Follow up: This patient is seen periodically. Last time in July 1961. She has occasional blackout spells that sound like petit mal.

16-Year Follow Up

To us the case is interesting because we have a positive diagnosis of a malignant tumor. This was described by the surgeon as being invasive and as having been incompletely removed. Obviously, from the above report the pathology was not sufficiently well demarcated that the case could be catalogued in any certain sharp classification. It seems that we are justified in assuming that radiation has been a factor in her 16 year survival. One must also conjecture whether her present "spells" are related to brain damage from radiation or residual tumor.

Case 4

Lillian H., female, white, age 22, January 19, 1945
(*Figures 1 and 2*)

CC: Intermittent headache for three to four years, constant and severe for two weeks; diplopia for one week.

Physical: Paralysis of right lateral rectus; early choking of optic discs.

X-ray: Routine skull films show stippled midline calcification half way between vertex and sella. Ventriculograms: Dilatation of lateral ventricles; non-visualization of third and fourth ventricles; soft tissue mass 4 cms in diameter with summit calcification arising from middle fossa.

Surgery: January 30, 1945. After ventriculography it was decided not to do surgery at present because "it would be necessary to go close to the Rolandic fissure, with possibility of hemiplegia."

Radiation therapy: January 30, 1945 to February. 1400 r depth dose—therapy discontinued because of progressive disc choking increase.

Surgery: February 23, 1945. By Dr. Teachnor. "A ver-

tical linear incision in the dura and left frontal lobe, anterior to the Rolandic area was made. The incision was carried down through the brain substance to the lateral ventricle, however herniation of the brain substance was so great that a clear view of the tumor was impossible. I attempted retraction to revisualize the tumor in order to obtain a biopsy specimen, but herniation of the cerebral lobe was so great that we were unable to obtain a biopsy. This patient has a month old baby, all of our efforts in her behalf seem to be frustrated."

Radiation therapy: Radiation was given from February 23, 1945 to March 7, 1945 for an additional depth dose of approximately 600 r making a total of 2,000 r depth.

READMITTED: January 5, 1946 for removal of small sequestrum in bone flap. She is described as a "happy, young, female with no complaints except as related to the sequestrum." X-ray shows no appreciable change in the appearance of the calcification in the brain.

February 18, 1955. Hospital Admission, 9 Years Later

CC: Headaches.

HPI: Except for mastoiditis that responded to antibiotics six years ago she has felt well until headaches developed. In February 1955 she noticed recurring headaches accompanied by staggering and falling to the left when erect. She has recently noted diplopia and tinnitus with headaches.

Physical: Neurological essentially negative except for slight disc pallor; there is no frank edema.

X-ray: February 16, 1955. Ventriculogram "The huge tumor shown previously in the region of the septum pellucidum is now a very small (2 cms), partially calcified mass. No block is demonstrated. The cause for the recurrence of symptoms was not demonstrated." M. S. L.

Dismissed with no further definitive therapy; impression Glioma of the septum pellucidum.

Recent information indicates moderate headaches, periodically. This interesting case is carried in our files as a possible tumor of the septum pellucidum that has responded to radiation therapy. Unfortunately there is no biopsy.

I should add that none of the cases reported were treated with Cobalt 60. Our present therapy consists of treatment with Cobalt 60, to the tumor, usually with rotation, of a dose of 5,000 to 6,000 rads, given in 25 to 30 treatments. The cord is treated when indicated with a dose of 2500 to 3000 rads given in 10 or 15 treatments using orthovoltage.

Summary

From May 1932 to January 1, 1957, we have treated 161 cases of malignant brain tumors. With the exception of brain stem tumors and a few cases in which it was not deemed advisable to get a biopsy because of danger to the patient's life, we have patho-

logical data to substantiate the diagnosis of brain tumor. These tumors are classified as follows:

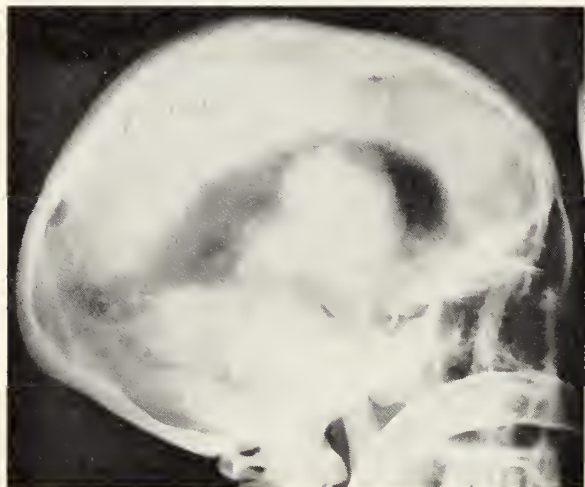
<i>Pathology</i>	<i>No. of Cases</i>	<i>Five Year Survival (PER CENT)</i>	<i>Living NO. TIME (YEARS)</i>
Astrocytoma	37	35	10 5-29
Glioblastoma			
Multiforme	27	7.4	1 16
Astroblastoma	5	20	1 17
Spongioblastoma	14	14	0
Oligodendroglioma . .	7	14	1 5
Ependymoma	4	50	1 5
Plasmocytoma	1	0	0
Pinealoma	1	100	1 5
Hemangioblastoma . .	7	43	2 11-15
Meningioma	7	29	1 14
Brain Stem Tumors			
(No biopsy)	22	23	5 5-11.2
Medulloblastoma	20	30	5 7-12.5
Cerebellar Sarcoma . .	1	100	1 8
Undiagnosed Tumors .	6	0	0
Epidermoid of			
Hypophyseal Stalk .	1	100	0
Optic Nerve			
(No biopsy)	1	100	1 18
Calcified Intraventricular Tumor	1	100	1 15
Total	161		31

We have 19.2 per cent survival of patients still living from five to twenty-nine years. These patients received irradiation for brain tumors in our University Radiology Department. Most of these cases, except as described above, had previous surgery with pathological proof of tumor.

Conclusion

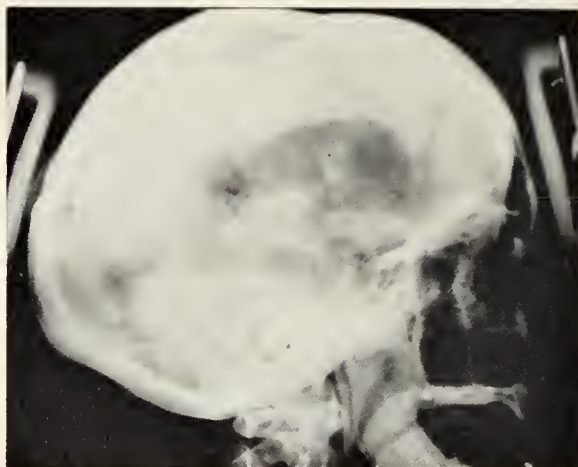
We must accept the fact that many brain tumors referred for radiation therapy with or without previous surgery will show no benefit from the treatment. The fact must also be accepted by all concerned that in many cases where surgery has been done there is still residual tumor that will eventually, if not controlled, be disastrous to the patient. It is the response of the occasional, even most vicious tumor, to all that has been done for control, that encourages the surgeon and radiologist to continue to try for a cure. We must continue to talk in terms of survival for a certain period of time as a criteria of our success. Our report of a five year survival seems perhaps meaningless if the patient dies during the sixth year. However, it may be and we sincerely strive for this goal, that the patient's suffering was alleviated during this period. We will be first to recognize the fact that our report of 100 per cent five year survival or zero per cent five year survival based on one or two cases is of no significance. We also know that many cases

FIGURE 1



Case No. 4—Lillian H.
January 30, 1945
Prior to surgery and irradiation.

FIGURE 2



Case No. 4—Lillian H.
February 15, 1955
Following surgery with unsuccessful biopsy
followed by irradiation.

of astrocytoma, particularly, carried in our five year survival column owe their good fortune to the slow growth of the tumor and the localization which make surgical removal successful. We are sure that the child who has had a diagnosis of medulloblastoma and is still alive after five years owes his life to the efforts of the radiologist. We may assume that some of the patients with infiltrating tumors are alive because of radiation treatment.

Acknowledgement

We wish to express our appreciation to the members of the Department of Neurosurgery, including the late Dr. Frank Teachnor, and the present staff neurosurgeons, Drs. William Williamson and Charles Brackett, for their advice. All surgery was done by them. We appreciate also the assistance of Dr. James Boley and John Kepes for reviewing pathology.

References

1. Bailey, P., Buchanan, D. N. and Bucy, P. C.: Intracranial Tumors of Infancy and Childhood. University of Chicago, 1939.
2. Dargeon, H. W.: Cancer in Children from Birth to Fourteen Years of Age. *J.A.M.A.*, 136:459, 1948.
3. Lampe, I., and MacIntyre, Robert S.: Medulloblastoma of the Cerebellum. *Arch. of Neurol. and Psychiatry*, 62:322-329, 1949.
4. Peirce, P., Carleton, B., and Bouchard, Jean: Role of Radiation Therapy in the Control of Malignant Neoplasms of the Brain and Brain Stem. *Radiology*, 55:337-343, 1950.
5. Smith, Richard A., Lampe, Isadore, and Kahn, Edgar: The Prognosis of Medulloblastoma in Children. *J. of Neuro. Surg.*, 18:91-97, 1961.
6. Spitz, E. B., Shenklin, H. A., and Grant, F. C.: Cerebellar Neoplasm in Adults. *Arch. of Neurol. and Psych.*, 57:417-422, 1947.
7. Tice, G. M., and Irving, N. W.: Roentgen Therapy Supplementing Surgery in the Treatment of Gliomas. *J. of Neuro. Surg.*, Vol. VII, 6:509-520, 1950.

DRUG MANUFACTURING—A PUBLIC UTILITY?

I sometimes suspect that our most persistent and vocal critics are not so much interested in correcting our alleged abuses within the context of American medicine, as in undermining the very structure of American medicine itself. As one man frankly suggested to a Congressional subcommittee: "Drugs should be treated like a public utility."—T. F. Davies Haines, President, Ciba Pharmaceutical Company, in *J. of Indiana State Med. Assn.*, Dec. 1962.

Hemorrhage

Management of Upper Gastrointestinal Bleeding

STANLEY O. HOERR, M.D.,* *Cleveland*

THE TOPIC THAT I am going to discuss concerns family physicians, internists, general surgeons, radiologists, and anesthesiologists, among others. Through the years, the approach to the problem of bleeding from the upper gastrointestinal tract has become more systematic and the treatment of the patient greatly improved. The improvement has come about largely through teamwork.

Twenty years ago surgeons commonly operated on every patient they saw; internists, by way of contrast, "shielded" their patients from the surgeons right down to the last gasp (and I do mean the last gasp). Both surgeons and internists had a great deal to learn from each other. The surgeon had to learn that a patient could look critically ill from bleeding and still get well without an operation. The internist had to learn that since there were some patients who might require operation, he should ask the surgeon to follow the patient with him, to assure the patient that the operation would be performed at the optimum time, and that this golden opportunity would not escape.

Although most blood that is vomited originates in the intestinal tract, it is worth remembering that occasionally hemoptysis is difficult to distinguish from hematemesis. We are well aware that duodenal ulcer is the leading cause of hemorrhage from the upper gastrointestinal tract, but we should not forget the less common causes, including esophageal varices, erosive gastritis, gastric ulcer, and carcinoma or other malignant diseases of the stomach. Nevertheless, if you are dealing with a patient who is bleeding, and the origin is not known, if you guess duodenal ulcer you would be right about three-quarters of the time.

When I first became interested in this field, and discussed it before various medical groups, I used to hear family physicians and internists make the statement that in a long experience with bleeding ulcers they had never seen, or heard of, anybody actually dying of hemorrhage from a duodenal ulcer. The theory at that time was that the bleeding always stopped when the patient went into collapse, and that if he were just left alone judiciously he would recover. Well, in case there should be anybody in this

Certain principles should be kept in mind by those of us who treat patients with a serious upper gastrointestinal hemorrhage. Our first aim must be to support the circulation, and this can be done by the liberal use of blood transfusion. Our second aim is to stop the bleeding, and this will normally be possible with the use of conservative measures, but may require surgical intervention. In selected instances, special devices like the Sengstaken-Blakemore tube, or gastric cooling, may be valuable.

Finally, we should attempt to prevent recurrence of the bleeding by appropriate medical management, if indicated, or by an appropriate surgical operation, performed either at the time of stopping the bleeding, or at a time of election after the bleeding has ceased.

audience who has never seen or heard of a patient dying of hemorrhage from a duodenal ulcer, I assure you it can happen. One patient, I am sorry to say, we were observing in the hospital for bleeding; he had a sudden hemorrhage in the middle of the night, vomited, fainted while vomiting, aspirated the blood, and died instantly. This type of bleeding constitutes a surgical disease. It can be cured essentially 100 per cent of the time by operation, and it is very likely to result fatally if operation is not promptly performed.

The way in which the responsible physician thinks about patients who are bleeding can influence and improve treatment. The first thing to determine is whether the bleeding is rapid or slow. If the bleeding is slow, the "heat is off," so to speak, and there is plenty of time to evaluate the patient. If the bleeding is rapid, quick decisions may be necessary.

With rapid bleeding the origin may be known, or it may not be known. The patient may have a proved duodenal ulcer, or proved esophageal varices, and intelligent planning is possible. In either case, if the bleeding stops, which it will nine times out of ten, surgery can be done on an elective, interval basis, and investigation carried out when the patient is in better condition,

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On the other hand, if rapid bleeding continues, and the origin is unknown, a dangerous situation exists, where the maximum amount of brains and experience should be brought to bear upon the problem. Surgery, if indicated, should be carried out promptly.

With respect to making the first decision as to whether bleeding is rapid or slow, the physician needs only to examine the patient. He needs to decide only if the patient is in collapse, has been in collapse, or is about to go into collapse. Complex laboratory data, such as blood volumes, are not necessary to determine this. One should note that the syncope which is occasionally the first sign of a large upper gastrointestinal hemorrhage does not necessarily mean that bleeding is rapid. The effort of vomiting, or of passing a large tarry stool, coupled with a circulation which has suffered some depletion, may be sufficient to make the patient faint. Recovery from this initial syncope is usually prompt. How should we observe the patient who presents himself with active bleeding, in order to safeguard him properly?

Immediate Orders and Treatment

Significance of Blood Pressure and Pulse Rate. It is useful to order specifically that the blood pressure and pulse be recorded every 30 minutes, and to put limits as to what is to be regarded as a dangerous change. Leave nothing to the imagination of the nurses. One can leave instructions, for example, that if the blood pressure goes below 100 systolic, the physician is to be called, and a blood transfusion is also to be started. Similarly, one may specify that if the pulse rate rises above 120 per minute the same procedure is followed. The physician can set whatever limits of blood pressure and pulse rate that seem reasonable for that particular patient.

Bedside Appraisal. In addition to determining whether the patient looks white, feels cold and sweaty, has a "thin" pulse, etc., the physician may have a patient who himself can tell when he is bleeding. Such a patient may say: "Doctor, I have started bleeding again. I know it," and sure enough 10 or 15 minutes later this will be reflected in a rise in pulse rate, a drop in blood pressure, and perhaps the vomiting of blood.

Blood Studies. Most physicians, working in institutions which lack reliable blood volume determinations, must depend on simpler studies. Hemoglobin and hematocrit determinations, obtained at intervals of eight hours, will reflect accurately, by hemodilution, a continuing hemorrhage.

Ulcer Regimen. It is useful to put the patient on an ulcer regimen unless he is actually vomiting. If he is vomiting, a tube in the stomach will be necessary to keep the stomach empty. In addition, this will give

up-to-date information as to what is going on in the stomach, and will also prevent the effort of vomiting. Even if the cause of bleeding is not an ulcer, an ulcer regimen may be helpful for anything else that might be causing the bleeding, such as esophageal varices, a cancer, gastritis, hiatus hernia, etc.

Blood Transfusions. The old idea of not transfusing patients has gone completely by the boards; we are obligated as physicians to maintain the circulation as the number one objective. Some patients may require two to four transfusions in the course of the first few hours to stabilize the circulation. If they require more than that, an operation must be considered. Operation should also be considered in patients who require more than three transfusions per 24 hours to maintain stability.

Sedation. Absolute bed rest is usually a good idea. Exceptions may be made for patients who have difficulty using the bedpan. Many of these patients are not experiencing pain, and hence morphine or other narcotics are not necessary, and the apprehension associated with the hemorrhage may be controlled with a barbiturate or tranquilizer.

Diagnostic X-rays. If the source of the bleeding is uncertain, which so often seems to be the case, the cooperation of the X-ray Department should be elicited in obtaining an x-ray promptly. Physicians have been slow to recognize the value of prompt diagnostic x-rays, but surgeons who are following patients, and who may have to operate on short notice when the patient's condition worsens, are very grateful for accurate information concerning the source of the bleeding. It may prevent surgery being done on the abdomen when it ought to be done through the chest for bleeding esophageal varices. The radiologist should understand that he is restricted as to the amount of manipulation, and he should also understand that the physician will be sympathetic to the handicap he places on the radiologist by restricting him in this way. Nevertheless, even if the full radiologic technic may not be employed, it will be particularly useful to know whether esophageal varices are present or not, and the radiologist will be accurate more than 50 per cent of the time on this. Fortunately, there is an additional safeguard, in that if esophageal varices are the cause of the bleeding it is usually obvious from the history and from the physical findings.

If there is a delay of a week or ten days in obtaining diagnostic x-rays, not only may you not have the information at the time that you wish it, but also the ulcer may heal without a trace.

Since gastric ulcers are less likely to stop bleeding spontaneously than duodenal ulcers, and since most patients with a gastric ulcer with a serious hemorrhage are going to require operation ultimately, most

of us feel that surgery is indicated very early in the course of the hemorrhage.

Evidences of Continued Bleeding. Tarry stools are not an invariable evidence of continued bleeding, since they may be retained in the bowel for several days after bleeding has stopped. On the other hand, if patients are bleeding actively enough to go into circulatory collapse, the blood will promptly become evident, either by hematemesis or the passage of a tarry stool. Increase of the pulse rate, or drop in blood pressure, are evidences of bleeding, and if these changes are sudden, are evidences of rapid bleeding. Progressive drop in hemoglobin or hematocrit are delayed evidences of continuing hemorrhage; they may actually continue to drop after bleeding has ceased. Of course, the cardinal indication of continued or renewed bleeding is collapse, and if this occurs while the patient is actively under treatment it almost always means that prompt operation should be carried out.

Indications for Urgent or Emergency Surgery. At my institution we define emergency operation as one which is carried out within an hour or two of the decision to operate, irrespective of the hour of the day or night. We regard *urgent* operation as an operation carried out as a scheduled event in the presence of slow bleeding, usually on the day following the decision to operate.

Emergency surgery may have to be performed on a patient within the first few hours of admission if he fails to stabilize the circulation on four to six units of blood. The other cardinal indication for emergency surgery, generally agreed on by everyone, is the patient who goes into shock after having been under ideal treatment at the time that he bled again. Hardly ever should emergency surgery be undertaken within three or four hours of the admission of the patient to the hospital. It is most rare for a patient to bleed to death from an ulcer as rapidly as this, and the position that I take is that if somebody is going to die from a bleeding ulcer while receiving blood in the course of the first hour or two of hospital admission, the hemorrhage is of such magnitude that it is unlikely that an anesthetic could be induced and the abdomen opened before the patient died.

The chief indication for urgent operation is evidences of continued bleeding beyond two or three days of ideal treatment. If the patient is otherwise in good health, bleeding beyond 48 hours after admission to the hospital should be enough reason for operating. If there are other complicating diseases, it may be justifiable to delay another few days, in an effort to have the bleeding quiet down.

Vagotomy, Pyloroplasty, and Ligation of the Vessels in the Ulcer Base. A recent advance in the operative control of bleeding duodenal ulcers has been the

proof that a gastric resection is not necessary. I was brought up with the belief that a ligation of the vessels in the ulcer base was very dangerous, unless there was a diverting gastric resection performed proximally. There is now a large body of evidence that vagotomy, pyloroplasty, and a direct ligation of the vessels in the ulcer bed will stop the bleeding effectively in almost every case. In very elderly, or poor risk patients, this is much simpler than a gastric resection. This knowledge has proved of immense benefit to surgeons who deal with City Hospital type population, where the patients are often undernourished, or alcoholics, in addition to having their bleeding problem. I have performed this procedure about a dozen times, and have had one death; the death was not due to hemorrhage and occurred in a depleted, elderly woman who never made a satisfactory recovery from the anesthetic and the operation. Post-mortem examination showed that the bleeding was controlled. Although this was scant comfort to the patient, it was clear that a bigger operation also would not have helped her.

Gastric Cooling, and Balloon Tamponade. The Sengstaken-Blakemore tube has established its value for arresting the bleeding in patients with esophageal varices. It is tricky to use, and requires experience and patience to use it correctly. Its usefulness is limited, but definite.

We have had some experience in our institution in connection with gastric cooling for the control of acute hemorrhage. Our thinking has been divided about it. I personally do not enthuse over it, so that my particular bias is for either getting the patient by without an operation, or operating on him and settling the problem then and there. There are circumstances, however, where it may be possible to "purchase time," and create a more favorable operative risk by delaying surgery. A big balloon placed in the patient's stomach, with cold fluid running through it, will stop bleeding. It is excessively uncomfortable, as far as the patient is concerned, and it does require an experienced team, and continued attention, if accidents are to be avoided. It is not unheard of to have stomachs frostbitten by having the temperature go below the recommended one, and we have had one balloon explode, where the pressure was incorrectly controlled. The machine that produces the cooling solution must be constantly monitored, and I have likened its use to driving a car at 65 miles an hour down a throughway. You simply can't take your eyes off the road for any length of time, and expect to drive safely. Perhaps better machines will be forthcoming in the future. I still feel that the use of this method is experimental, and that it should be worked out by physicians who have the time, and the teams, to study it.

Peripheral Aneurysms

Arteriosclerotic, traumatic, and infectious—replacement now advised

C. ROLLINS HANLON, M.D.,* *St. Louis*

WE ARE SEEING more peripheral aneurysms in practice today because the population of elderly individuals is increasing rapidly and peripheral aneurysms are largely in this age group as a result of arteriosclerosis. The other common cause is gunshot trauma, which relatively rarely affects the popliteal artery except in military practice.

Although one practitioner may see very few of these aneurysms, their importance must not be minimized, because they constitute a serious threat to the patient who has one. This is true even if the lesion is asymptomatic. If one follows a series of such patients with popliteal aneurysm, within a year of its detection in half of these people the lesion will cause loss of the limb or even loss of life.

So this is a dangerous lesion. Even if it thromboses, the problem is not satisfactorily resolved, because thrombosis may remove the threat of rupture but it will often lead to loss of the leg. One might think that thrombosis would be as satisfactory as excision of the aneurysm. This is not so because the edema associated with thrombosis interferes with surrounding collateral circulation and the result is often gangrene.

The proper therapy is excision of the aneurysm with replacement. This may seem fairly radical for a lesion which is asymptomatic but it really is conservative when you consider the poor prognosis if popliteal aneurysm is allowed to run its natural course. Here we touch on a fundamental problem in elective operations, that is to say, the risk to the patient of letting the lesion alone as compared to the risk of removing it. This depends on many factors including the natural history of the disease and the general condition and age of the patient.

In a young person, there is no question that the aneurysm should be excised. One sees this lesion only rarely in the young. I had a patient in his thirties who developed a sudden pain behind his knee as he tried to go over a fence while hunting rabbits. After getting over the fence he was so crippled with pain that he could scarcely get to his automobile. We excised this aneurysm, which surprisingly was a true aneurysm with all the coats of the vessel involved in the

process. This is in contrast to the false aneurysm or pulsating hematoma in which the wall of the sac is composed of only a part of the vessel and the majority of it is composed of surrounding adventitious structures compressed by the expanding blood collection. These lesions may rupture or advance secondarily into the surrounding tissues or even be incised by mistake as an abscess.

In contrast to this good risk young patient with disabling symptoms is the older patient with negligible symptoms. Such patients should also be advised

Aneurysms in the extremities are seen in increasing numbers, at least partly because of the larger number of elderly people. They are serious even though asymptomatic, and, except in unusual circumstances, should be excised for the risk of surgery is less than the risk of leaving the aneurysm alone.

to have operative treatment because the threat of gangrene is so real and the operative risk is quite small. Ninety per cent of those who are alive a year after operation have excellent results. Those who die do so of the usual things that kill people in the seventh and eighth decades but they don't die from aneurysmal complications after resection and replacement.

We generally use a dacron prosthesis. It is possible that the segment removed could be so small as not to require a prosthesis, but this is rare. Since the lesion is often fusiform and elongated, one may need to employ a fairly long prosthesis. One of our patients is a physician in his eighties, still practicing (only in the afternoon) some three and a half years after dacron replacement for his popliteal aneurysm.

Going proximally in the vascular system we come to aneurysm of the femoral artery in the groin or in Hunter's canal in the thigh. These usually come to notice because of painful enlargement associated with dissection or perforation into the surrounding muscles. One such patient was an elderly nurse with advanced heart disease and emphysema who perforated

* Presented at the annual meeting of the Kansas Medical Society, May, 1962.

her artery with a bone spicule when she fractured her hip. She was nearly blind and bedridden so we elected to delay operation when she was first seen. Several months later the enlargement suddenly increased and she developed edema of the entire left lower extremity. We were able to remove the bone fragment, excise the aneurysm and insert a prosthesis under local anesthesia; the procedure didn't disturb her appreciably and she has not had further trouble from her aneurysm, although she remains severely restricted by her other problems.

The treatment of peripheral aneurysm is less risky than that of abdominal aneurysm, so we may operate in even less favorable patients with relative impunity. Finally one must re-emphasize the frequent confusion of peripheral aneurysm with phlebitis, abscess or other inflammatory states.

Occasionally one sees an aneurysm of the iliac artery—either common or external iliac. These are really not peripheral; they present as pelvic masses or in some instances as constipation. We treated the obstinate constipation of one old man by excising the false sac in his pelvis resulting from rupture of an iliac aneurysm—thereby relieving pressure on his rectum and relieving his symptoms. About three years later he repeated the performance on the opposite side and we again resorted to successful radical cure of his constipation by aneurysmectomy.

The traumatic peripheral aneurysm is not a true aneurysm, but a false aneurysm or pulsating hematoma. It originates from what may be considered a trivial wound, such as a cut by shattered glass over the wrist or elbow. The drawing of arterial blood samples may result in such an aneurysm. There may be brisk bleeding which finally stops on pressure, leaving a pulsating lump that remains the same size for weeks or months before beginning to enlarge slowly.

If a false aneurysm is present on a vessel such as the radial or ulnar artery, one may control it simply by proximal and distal ligation, excising the sac as necessary. In vessels such as the femoral artery, the vessel should be reconstructed if possible. This is not always easy, especially with sclerotic vessels, or excessively high pulse pressure as in aortic insufficiency. One such femoral aneurysm in a young man with aortic insufficiency originated from an arterial puncture and required four operations for its ultimate control.

In considering traumatic peripheral aneurysm one must also keep in mind the arteriovenous variety. These can develop wherever artery and vein run close together, as in the groin, the neck, or the upper extremity. They are troublesome but usually not dangerous to the patient's total welfare unless they involve large vessels and have been present a long time. One

patient was treated for intractable heart failure because of a large traumatic arteriovenous fistula that had been present for 43 years. He had delayed so long because an early attempt at closure had been unsuccessful and he had followed the physician's advice that he should never let anyone operate on him again.

These fistulae cause symptoms depending on the size of the communication and the volume of the shunt. With a large shunt one gets a local continuous thrill and murmur; pressure at the site obliterates the thrill and murmur and slows the pulse—the so-called Branham sign. One should never operate on such fistulae without a full appreciation of the serious operative difficulties in some of them. Simple ligation of the proximal vessel is inadequate; it is necessary to extirpate the fistula completely or recurrence is inevitable. At times one may avoid replacement of the damaged arterial segment because the collateral circulation is adequate, especially in fistulae of long standing.

Another important matter in practice is the apparent aneurysm. One sees individuals referred in because of a pulsating mass in the neck which has been considered to be an aneurysm and the patient is convinced that it may burst at any time. Generally it is a prominent, elongated carotid artery, but it is difficult to be absolutely certain of this and one may occasionally have to recommend arteriography to be sure.

If the patient comes in convinced that an operation is essential, it may be difficult to avoid exploration. This is almost as simple as arteriography and permits one to transfer the artery to a less obvious location behind the sternomastoid muscle if this is all that is required.

A final, uncommon item is the mycotic aneurysm, or the one associated with infection. These accompany subacute bacterial endocarditis and show up as painful peripheral nodules which may require individual attention after the main infection has been controlled. Sometimes the same signs and symptoms are noted with non-infected peripheral emboli from an arterial prosthesis.

As a final word, any abnormal peripheral pulsation may be an aneurysm, but most of them are not. As the aged population increases, such aneurysm will be increasingly common.

Anybody at all has a right to talk about himself—provided he knows how to be entertaining.—*Charles Baudelaire*

The world must learn to work together, or finally it will not work at all.—*Dwight D. Eisenhower*



Unusual Lesions of the Tongue: Hamartoma

Edited by CHARLES T. HINSHAW, JR., M.D.

Dr. Stanley R. Friesen (Moderator): In today's conference we will discuss tumors of a very interesting organ, the tongue. The base of the tongue, in particular, has an interesting embryologic derivation which is related developmentally to the thyroid gland. The presence of lesions at the base of the tongue is best detected on physical examination—by palpation and inspection. Other diagnostic features will be discussed. Dr. Allen, will you present your case, please?

Dr. Monte Allen (Resident in Otorhinolaryngology): A four-year-old girl was admitted to the Ear, Nose and Throat Service. At the age of four days she was noted to have a lump at the base of the tongue. Subsequent examinations revealed no abnormalities until about one year ago when her private physician again noticed the mass. She had no symptoms referable to the tongue. There was no history of dysphagia, dysphonia, or constitutional symptoms. Growth and development were normal. The family history and past history were non-contributory. Positive physical findings were limited to a 2 x 3 x 1 cm., pinkish white, smooth mass at the base of the tongue, in the midline, arising in the area of the foramen cecum. I^{131} uptake studies confirmed the examiner's impression of normal thyroid tissue in the neck. There was no I^{131} uptake by the mass in the tongue.

Dr. Frank A. Mantz (Pathologist): Were the faucial tonsils or adenoids enlarged?

Dr. Allen: The tonsils were normal in size. I presume the patient had adenoids of normal size.

Dr. Fernando R. Kirchner (Otorhinolaryngologist): I want to emphasize several things about this patient's history. The mass was first noticed by

the physician who delivered and examined the child. The mother was told she might have some trouble in feeding the baby. However, if feeding difficulties were not encountered, the mass at the base of the tongue was not to be approached until the child grew up. It was felt to be a congenital anomaly. Early infancy was normal, without evidence of airway obstruction, with a normal cry, normal feeding, and normal development. Finally, the mass did grow, but its growth was proportional to the growth of the patient, always keeping its proportion to the adjacent organs of the buccal cavity. When we examined the child, a mass arising from the midline of the tongue in the region of the foramen cecum was seen. There was no evidence of dysphonia, dysphagia or airway obstruction, whatsoever. Because of the location of the mass, investigation of the thyroid gland was necessary. The mass could represent either aberrant thyroid tissue or the entire gland—a lingual thyroid. It was found that the gland within the neck was normal and there was no evidence of uptake by the mass at the base of the tongue. Lateral x-rays were taken, looking for opacity suggesting tumor of bone or calcification in thyroid tissue. The x-rays were normal. Pulling the tongue forward revealed a mass rising from a small pedicle with a well circumscribed base (*Figure 1*). It was covered by a thick, fibrous pseudocapsule. Visually the mass appeared somewhat cystic, although on palpation it was solid and rubberish, without the fluctuance found in cystic masses. Palpation around the pedicle revealed no relation of the mass to the hyoid bone. It appeared to be rising between the muscles of the tongue. The mass was removed by excision of the pedicle between the hyoglossal muscles.

Dr. Friesen: It didn't cause her any difficulty in swallowing? That is surprising.

Cancer teaching activities at the University of Kansas Medical Center are aided by grants from the National Cancer Institute and the U. S. Public Health Service.

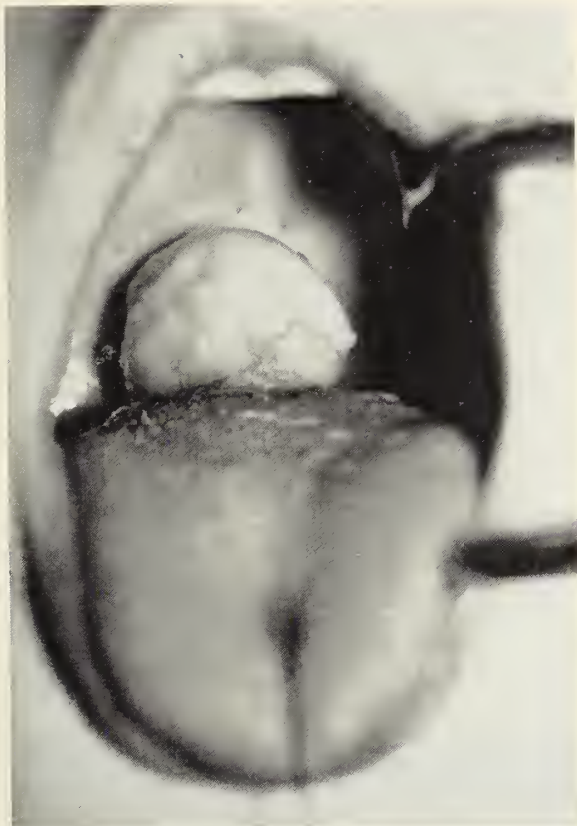


Figure 1. Pedunculated hamartoma arising in midline at base of tongue.

Dr. Kirchner: This can be explained in some ways, but, of course, we are on theoretical grounds. First, this mass was located in the midline. As we know, the mechanism of swallowing involves the lateral aspects of the tongue in the vallecular area of the epiglottis and tongue. This helps divert the food material into the pyriform sinuses. Rarely does swallowing involve the posterior portion of the pharynx and tongue. A posterior midline mass would thus help to divert the food laterally without producing dysphagia. Second, the fact that this was a relatively soft mass helps explain why there was no evidence of dysphonia. In other words, the mass would move freely with the tongue. Being located on the posterior third of the tongue, there was space enough in the oral pharynx not to be an obstructive obstacle for phonation and swallowing.

Dr. Friesen: Why didn't she gag? If you were to put a tongue blade on the back of my tongue I would gag.

Dr. Kirchner: Gagging is quite a supratentorial type of reflex. For example, I am sure everyone here has had the experience of swallowing a nice piece of juicy steak and not gagging. Yet the same persons gag when a tongue blade is placed upon the back of

their tongue. This is quite a cortical phenomenon, and some people do gag more than others.

Dr. Friesen: Why do you use local anesthetics during direct laryngoscopy and bronchoscopy?

Dr. Kirchner: More than for gagging, local anesthetics are used to prevent laryngeal spasm. Our patient didn't have laryngeal spasm because the mass was not irritating. It was an intrinsic mass and I think its innervation was that of the normal innervation of the tongue. Rarely do tumors in the hypopharynx or larynx produce increased gagging reflex or laryngeal spasm.

The differential diagnosis for a posterior midline mass of the tongue must include undescended thyroid, aberrant thyroid, thyroglossal duct cyst, vallecular cyst, and teratoma. The undescended or lingual thyroid is quite a common congenital tumor in this area, representing persistence of the thyroid gland at its point of origin. Tumors consisting of undescended thyroid, clinically, can be differentiated because they rarely present themselves with a small pedicle as did the mass seen in this case. Of course, whenever normal thyroid is found in this location it shows uptake of the iodine isotopes and this uptake is shown by the scanogram during I^{131} studies. It should be mentioned that when undescended thyroid is located at the base of the tongue, it usually is the total thyroid gland. It is uncommon, in these cases, to find any thyroid tissue in the neck. Therefore, if surgical intervention is contemplated because of the obstruction that might ensue, the patient should receive thyroid hormone therapy postoperatively.

Aberrant thyroid tissue can occur in this region and can be pedunculated, as the tumor in this case was. These occur in adults and do not show uptake of I^{131} . Some authors attach the same significance to aberrant thyroid tissue at the base of the tongue as they do to aberrant thyroid tissue in the lateral regions of the neck, believing it to be metastatic carcinoma from the thyroid gland.

Now, there is another entity which occurs at the base of the tongue, I have seen two cases, that being the thyroglossal duct cyst. The thyroglossal duct cyst is formed by persistent patency of the median diverticulum which occurs at the base of the tongue, giving origin to the thyroid gland. This median diverticulum grows downward and backward as a tubular duct. It normally undergoes degeneration, its upper end represented by the foramen cecum and its lower end by the pyramidal lobe of the thyroid gland. Thyroglossal duct cysts present in three degrees. The first degree is located above the hyoid, presents itself in the midline near the foramen cecum, and looks like a lump covered by normal mucosa. Typically, there is disproportionate growth of the mass, in comparison with the throat, during upper respiratory infections, producing all the signs and symptoms of inflammation.

A second degree thyroglossal duct cyst is one located at the level of the hyoid bone. The third, and most common, type of thyroglossal duct cyst is located below the thyroid in the midline, in the infrahyoid area, in the space located between the superior edge of the thyroid cartilage and the hyoid. The thyroglossal duct cysts, particularly the second and third types, have a midline relationship with the midportion of the body of the hyoid. Therefore, complete excision requires removal of the midportion of the hyoid bone, otherwise recurrence is frequent. The first degree thyroglossal duct cyst requires excision through the buccal cavity.

Another mass that can occur in the mouth, not located in the foramen cecum but arising at the recess formed by the base of the tongue and the epiglottis, is the so-called vallecular cyst. This consists of mucous glands, forming a soft cyst. These are usually asymptomatic, incidental findings, rarely produce airway obstruction because they are very soft, and rarely produce any evidence of dysphonia. The excision of this cyst is very simply done through a laryngoscope.

Teratomas rarely occur in the tongue, but when they do they are usually seen at the foramen cecum, where the four congenital buds of the tongue converge.

Dr. Friesen: Are there distinguishing features in the appearances of lingual thyroid, thyroglossal duct cyst and the tumor mass we have seen today?

Dr. Kirchner: I want to call, if I may, on Dr. Kittle, who has seen lingual thyroids.

Dr. C. Frederick Kittle: Neither in the patient I saw several years ago, nor in reading about this, have I encountered a pedunculated lingual thyroid. Both the lingual thyroid and thyroglossal duct cyst are fairly classical, occurring at the base of the tongue. Pedunculated and polypoid lesions at the base of the tongue are not too frequent. I wonder if a myoblastoma in this location might become pedunculated?

Dr. Mantz: Not generally; they present as gently rolled, somewhat flat elevations. I know of no incident where they have been pedunculated. They are very characteristic tumors and should be considered, particularly in this case, where a distinct yellow color was seen on gross examination. Myoblastomas have a rather characteristic yellow color.

I would also like to mention the possibility of amyloid tumor. As you know, the tongue is not an unlikely place for the deposition of primary amyloid and is a rather frequent site for the deposition of amyloid in multiple myeloma. The tumefaction thus produced may be the presenting complaint of the patient. I have seen two cases presenting in this way, and this finding led to the diagnosis of multiple myeloma. Amyloid usually produces a diffuse enlargement, a macroglossia. But, in approximately 10 per

cent of the cases it produces a distinct and moderately well circumscribed tumor-like mass, which may be located at the base of the tongue.

Dr. Friesen: Dr. Kirchner, what did you think this was preoperatively, before you removed it?

Dr. Kirchner: A teratoma.

Dr. Friesen: Can we review the microscopic findings please?

Dr. Mantz: Microscopic study of this lesion is rather confounding. It has a surface of perfectly normal stratified squamous epithelium, which, if anything, is altered only by slight atrophy. Immediately beneath it is a layer of mature fibrous tissue in orderly arrangement overlying a layer of normal adipose tissue. The bulk of the tumor is composed of scrambled masses of smooth muscle, salivary gland tissue, striated muscle, lymphoid tissue and peripheral nerve fascicles (*Figure 2*). In short, the polypoid lesion is a disorderly overgrowth of adult tissues normal to the part and, as such, falls into the category of hamartomas as described originally by Albrecht. The lesions cannot be considered as true neoplasms in the usual sense of the word, but are more properly viewed as local errors in development

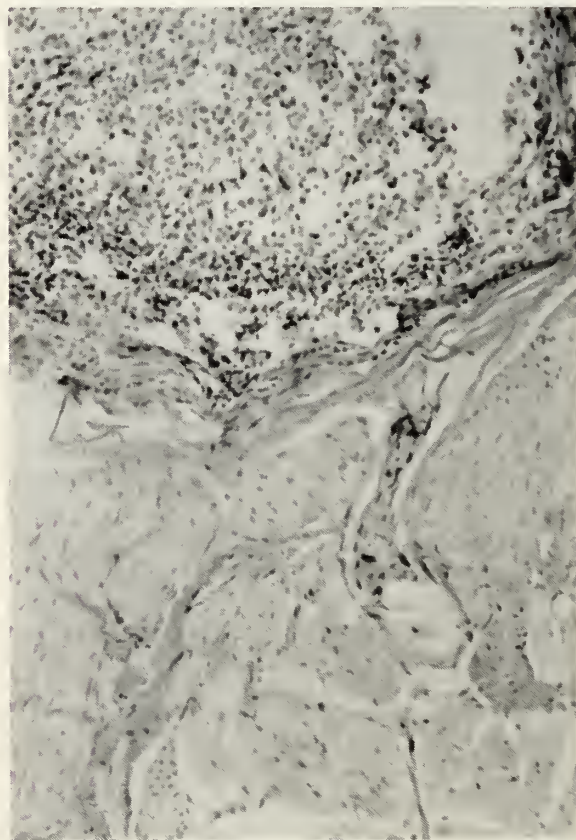


Figure 2. Hamartoma with elements of lymphoid tissue, smooth muscle, skeletal muscle and peripheral nerve.

yielding a scrambling of adult tissues either typical of the area or derived from the primitive mesenchyma from which the part was derived.

Hamartomas are not uncommon and may be derived from any one of the three germ layers. Tissues and organs of mesodermal derivation are most frequently involved with ordinary fibromas and hemangiomas falling into this category. An example of hamartoma derived from ectoderm would be the sebaceous adenomas, usually of the face, described by Pringle in association with tuberous sclerosis. Endodermal origin is likewise observed and perhaps the most classic example of this is congenital polyposis of the colon. The Peutz-Jehger syndrome, likewise, would serve as an example of hamartomatosis of the intestinal tract.

These lesions have certain characteristics that are noteworthy. First of all, they appear to have some genetic background. Despite this fact, they may be delayed in their development. In other words, these lesions may appear long after birth, although they may be controlled by some genetic factor, possibly inherited from the parents.

Another feature that is noteworthy is their frequent association with certain characteristic symptoms or train of symptoms whereby they are often recognized by certain specific names. You are all aware of von Hippel Lindau's disease. Von Recklinghausen's disease is another, and we've already referred to the Peutz-Jehger syndrome.

It should always be remembered that these lesions carry a certain slight malignant potential, rarely undergoing malignant change. Should such an event occur, the resultant cancer might be referred to as hamartoblastoma, if we are going to hold semantically to the term which has been chosen for it.

Dr. Friesen: Would you explain the difference between a hamartoma and teratoma?

Dr. Mantz: There is a great deal of difference. Teratoma implies a spontaneous, autonomous new growth, derived from multi-potential tissue and producing representatives from all three germ layers. A hamartoma is a local overgrowth of tissues normal to the part. For example, a hamartoma of the liver might have liver cells, bile ducts and fibrous tissue; a hamartoma of the lung might have cartilage, mucous membranes and fat.

Dr. Friesen: In today's case we have representatives of two germ layers. Do there have to be three layers to be a teratoma?

Dr. Mantz: Yes, and they have to be foreign to the part.

Dr. Friesen: Are these pretty rare, hamartomas of the tongue?

Dr. Mantz: The oral cavity is not the most frequent site for hamartomas. In attempting to look this up, I found the statement made that when in the tongue, the posterior midline is the most frequent area where they are seen.

IF YOU OWN SERIES E U. S. SAVINGS BONDS

AND are near retirement age, you should investigate the practicability of exchanging these bonds for the new Series H U. S. Savings Bonds.

Here is how the exchange works: Supposing you have purchased over the last 20 years enough Series E Savings Bonds that the total value of them would equal \$20,000. You can exchange this \$20,000 of E Bonds for \$20,000 of the Series H Bonds which differ from E's in that they pay the interest by Government check twice each year.

The guaranteed interest rate for the H Bonds is $3\frac{3}{4}$ per cent during the ten-year life of the bond. This means you will receive on an average \$750.00 of H Bond interest each year without touching the \$20,000 principal. If an emergency arises, and you need money, you can cash Series H Bonds without a lot of red tape.

The \$750.00 average yearly interest earning will be mailed you in the form of two checks, one each six months. (The exact interest payments would be: \$160.00 at the end of the first six months; \$290.00 the second six months; \$320.00 the third six months; and \$400.00 each six months thereafter until the bond matures in ten years.)

In addition to any social security or other types of income, you can always depend on the interest from the H Bonds which in this case amounts to an average of \$62.50 per month over the ten-year life of the bond.

On top of that, you can delay paying all the accumulated interest on the E Bonds you have exchanged until you cash the Series H Bonds.

If you are interested in the exchange features of Savings Bonds, your banker is the one to see. He will not only answer your questions, but will also order Series H Bonds for you and at no cost to you or Uncle Sam for his services.

The President's Message

DEAR DOCTOR:

This issue of the JOURNAL affords the president the opportunity to express his appreciation to many individuals. These individuals compose the nucleus of many facets of our Kansas Medical Society. The county officers, the councilors, the Medical Auxiliary, the committee chairmen, the committeemen, the members of the staff of the executive office, the state officers and many others have contributed to the success this year will reveal. The president thanks each of you for your efforts in behalf of the Kansas Medical Society.

The leadership has attempted to continue its communication with the members. It has also striven to carry out the directives and policies of the House of Delegates and Council. Some of the ideas presented by past leaders have developed into actuality. These generalities have occupied the time of the elected officials this year. Many ideas have been presented and it is hoped that their development will ensue under the capable leadership of Dr. H. St. Clair O'Donnell and his successors.

I want to thank again all who have contributed so much this year. I wish Dr. O'Donnell every success as he accepts this office in May. I am most interested in seeing and thanking each of you in person at the state meeting in Salina on April 29, 30 and May 1.



Norton L. Francis M.D.

President



Blue Shield

A Major Medical Plan for the Aged—"Series 60"

Kansas Blue Cross-Blue Shield publicly announced the availability of a second prepayment plan for the aged in mid-March. The program is known as the SERIES 60 PLAN and, as in the case of the previously announced Senior Citizens Plan, is specifically designed to provide benefits needed by persons over 60 who are not presently able to secure standard Blue Cross-Blue Shield coverage.

SERIES 60 approaches prepayment of health benefits from an entirely different aspect than the Senior Citizens Plan. Whereas the Senior Citizens Plan provides "first-dollar," basic benefits type coverage accompanied by a Service Benefits provision, SERIES 60 will employ a Major Medical approach.

There will be no "Basic Benefits." A \$200 per contract year deductible applying to combined Blue Cross-Blue Shield benefits will be administered. This will be an individual deductible. When a member meets his deductible within a given contract year, Blue Cross-Blue Shield will pay 80 per cent of further charges on covered services instead of making allowances according to a Fee Schedule. The SERIES 60 member will continue to be responsible for 20 per cent of charges for covered services. At the end of a given contract year, the member will be responsible for satisfying a new deductible before again becoming eligible for renewed 80/20 per cent co-insurance benefits.

On this basis, SERIES 60 benefits will continue in effect until combined Blue Cross-Blue Shield co-insurance payments to an individual member have reached a total of \$5,000 which is the extent of Major Medical liability under the plan.

Blue Shield services that will be eligible for co-insurance benefits are the following:

- **PHYSICIAN'S SERVICES**—All Services normal-

ly performed by a physician including home and office calls as well as one consultation per hospital admission.

- **PRESCRIPTION DRUGS**—Any drugs requiring a doctor's written prescription.
- **MISCELLANEOUS SERVICES**—Including services by a registered physical therapist, ambulance charges, cost of orthopedic and prosthetic appliances, and limited oral surgery procedures.

Blue Cross benefits will include:

- **HOSPITAL CHARGES**—Semi-Private room charges and ancillary service expenses. Also, the hospital's average charge for semi-private rooms will be applied toward private room costs.
- **SKILLED NURSING FACILITY AND VISITING NURSE BENEFITS**—These will be available in cases in which member receives services in a Facility or from a Visiting Nurse Agency which has a contract with Blue Cross. At present this benefit is minimal; however, its value will be greater as further agreements are secured by Blue Cross.

Benefits for Nervous and Mental Care and for State Institution Tuberculosis admissions will receive limited coverage. Nursing home admissions are not currently eligible for SERIES 60 benefits nor applicable to deductibles.

No waiting periods will be applied to SERIES 60 members. Excluded services will be similar in most instances to standard Kansas Blue Cross-Blue Shield limitations with one major exception. There *will be* limitations upon benefits for pre-existing conditions under the new plan.

Pre-existing condition limitations will be deter-

(Continued on page 161)



Editorial COMMENT

Informed Consent

On March 2, 1963, the Supreme Court of Kansas announced an opinion which modified a previous statement of this court on the subject of informed consent. It is recommended that members of the Kansas Medical Society familiarize themselves with the workings of this revised opinion because it expands and clarifies a subject of interest.

A group of physicians performed a cardiac catheterization upon a child during which procedure he expired. The plaintiffs in this case pled the doctrine of informed consent as a basis for asking a judgment from the court. The opinion in this case goes into some detail describing the events of the procedures as they occurred. The opinion then states the following:

... "At the outset it may be stated that all of the parties rely on our recent case of *Natanson v. Kline*, 186 Kan. 393, 350 P. 2d 1093, rehearing denied 187 Kan. 186, 354 P. 2d 670, the parties seeking to place a different construction on what was said with reference to informed consent. We said in the *Natanson* case at page 406 it is the duty of a doctor to make a reasonable disclosure to his patient of the nature and probable consequences of the suggested or recommended treatment, and to make a reasonable disclosure of the dangers within his knowledge which are incident or possible in the treatment he proposes to administer. But this does not mean that a doctor is under an obligation to describe in detail all of the possible consequences of treatment. To make a complete disclosure of all facts, diagnoses and alternatives or possibilities which might occur to the doctor could so alarm the patient that it would, in fact, constitute bad medical practice.

"Further, on pages 409-410, we said the duty of the physician to disclose, however, is limited to those disclosures which a reasonable medical practitioner would make under the same or similar circumstances.

How the physician may best discharge his obligation to the patient in this difficult situation involves primarily a question of medical judgment. So long as the disclosure is sufficient to assure an informed consent, the physician's choice of plausible courses should not be called into question if it appears, all circumstances considered, that the physician was motivated only by the patient's best therapeutic interests and he proceeded as competent medical men would have done in a similar situation." . . .

Come to Salina

The Annual Session of the Kansas Medical Society will be held in Salina, April 29 through May 1 of this year. The scientific program and a schedule of all events of this outstanding meeting may be found in other pages of this issue of the JOURNAL. Your examination of this program will provide many items of interest and for your entertainment.

Come to Salina where you will find ample living accommodations. There are two hotels and many motels to give adequate housing facilities for all. The Fine Arts Building will house all scientific programs. This building is ideally constructed for this meeting. The auditorium is comfortable and completely equipped to provide a perfect setting for the scientific presentations. In the same building, in an adjacent room will be housed the commercial and scientific exhibits. Adequate parking facilities surround the meeting hall.

Come to Salina on Monday for the athletic events, including a complete day of golfing and shooting. The annual banquet of the Kansas Medical Golf and Skeet Shooting Association will be held on Monday evening.

Come to Salina to hear Edward R. Annis, M.D., president-elect of the American Medical Association.

Every physician and his wife will wish to attend the annual banquet on Tuesday evening to hear this outstanding spokesman for the medical profession as he appears in person before this Society.

Come to Salina to attend the House of Delegates meetings on Monday morning and Wednesday noon to assist the Society in the conduct of its business session. Numerous items of unusual importance will come before the House of Delegates this year. A full complement of the delegates of each society is urgently needed to properly direct the course this Society shall take.

Come to Salina and enjoy an outstanding scientific program, the good fellowship of associating with members of the medical profession and for the business necessary in the conduct of the affairs of this Society.

Health Costs

From the Health Information Foundation of The University of Chicago comes a statistical analysis of expenditures in the area of health and medical care. A few items of this report will illustrate among other things the impact of Blue Cross-Blue Shield and other private insurance companies in the area of the economics of medical care.

It is announced that total expenditures for health care in the United States reached an all time high during the fiscal year of 1960-61 of more than \$29 billion. This is 134 per cent more than the amount spent in the year 1949-50.

"As the incomes of American families rose, the amount they spent for all goods and services rose. At the same time, they increased the percentage of their budgets allocated for health needs. In 1934-35 American consumers spent \$54 billion for all goods and services, and of this amount \$2.6 billion, or 4.7 per cent, went for health care. Today, total consumption expenditures have increased to about \$332 billion, and the portion of consumers' budgets spent for health care has increased to 6.6 per cent. On a per capita basis, this amounts to \$119 per person spent for medical services."

During the last 13 years the amount of benefits paid out by Blue Cross-Blue Shield Plans and private insurance companies has increased almost ten times. In 1948 all expenditures for insurance benefits amounted to \$600 million. In 1961 the amount was \$5,695.4 million. It is interesting to note that of the total benefit payments under all forms of insurance, Blue Cross-Blue Shield accounts for 45.4 per cent. Private insurance companies account for 47.5 per cent of the total. The rest is paid by all other types of plans.

Blue Shield

(Continued from page 159)

mined following a policy similar to that now used in standard Non-Group Blue Cross-Blue Shield. This means that a SERIES 60 member may be excluded from benefits for a specific pre-existing health problem if it is identified through answers given to certain Health Statement questions on the Membership Application. Also, inquiries may be made by Blue Cross-Blue Shield to the member's personal physician in order to determine whether or not a pre-existing condition should be eligible for benefits.

It is hoped that the SERIES 60 Plan will make available Blue Cross-Blue Shield benefits for that segment of the over-60 age group who did not join the Senior Citizens Plan for which enrollment is now closed. The cost of the new program—\$8.50 monthly per member—is within the financial reach of more persons; and it will be possible for present Senior Citizen Plan enrollees to transfer membership to SERIES 60. However, concurrent membership in both programs is not possible.

One important consideration to be observed in a decision to select SERIES 60 should be emphasized: The plan will be advantageous only to older persons who are presently in good health. Because of the level of Major Medical liability involved, it will be necessary to employ strict underwriting to avoid the immediate health risk category. The principal advantages of the SERIES 60 Plan are that a Major Medical Program is now available to senior citizens in relatively good present health which allows a comprehensive catastrophic illness protection at lower dues than previous "Basic Benefit" Plans.

CLASSIFIED ADVERTISEMENTS

FOR SALE: General Practice grossing \$30,000 in a five-year-old shopping center in a Kansas suburb of Kansas City, Missouri. Unopposed, rapidly growing area. Share suite with dentist. Leaving to specialize. Write to Box 1-363 in care of the JOURNAL.

WANTED: Young general practitioner to join two other G.P.'s and surgeon in suburb of Dallas, Texas. Attractive working conditions, good town, schools, and churches. Salary at first with partnership eventually. No investment required. Contact: Geo. W. Apple, Jr., M.D., P. O. Box 158, Plano, Texas.

DOCTOR WANTED: Excellent opportunity to take over established practice of retiring physician. Building and equipment priced to sell and available June 1, 1963. Write Box 1-463 in care of the JOURNAL.

TWO INTERNISTS WANTED. Unusual opportunity to join a young, multi-specialty group. Salary \$18,000 first year with rapid acceleration to partnership. Exceptional Clinic and Hospital facilities in Midwest town of 30,000 which is the Medical Center of large trade area and a fine place to raise a family. Write Box 2-463 in care of the JOURNAL.



Personalities—IN KANSAS MEDICINE

A panel discussion on the mental health of children was the program for the Paola PTA's annual health meeting in January. **Richard E. Davis**, Kansas City, was one of the panelists, and **Jack Rowlett**, Paola, served as moderator.

Lawrence Leigh, Overland Park, was named president-elect at the annual meeting of the Shawnee Mission hospital medical staff in January. **George R. Maser**, Mission, who was president-elect in 1962, assumed the presidency for the current year. Outgoing president was **Donald J. Smith** of Overland Park.

Elva E. Edwards, Emporia, was recently honored as "Man of the Week" by the *Emporia Gazette* for more than 54 years of medical service to Lyon county citizens.

Three Kansas physicians were recently inducted as Fellows of the American College of Obstetricians and Gynecologists. They are, **Grady N. Coker, Jr.**, Concordia; **Eldon S. Rich**, Newton; and **Angus M. G. Crook**, Wichita.

Paul Feldman, Topeka, was the guest speaker at a special meeting held in Dodge City in February. The meeting was designed to acquaint the physicians in that area with the latest in drug therapy and techniques in the field of mental health. **Wilbur Hilst**, Dodge City, was in charge of the local arrangements for the meeting.

More than 150 physicians and guests attended the Kansas regional meeting of the American College of Physicians held in Wichita in February. **William C. Menninger**, Topeka, was guest speaker, discussing the activities of the association. Among those presenting papers were **William E. Larsen** and **Robert T.**

Manning, both of Kansas City. **Ernest W. Crow**, Wichita, was in charge of the program committee and **James B. Fisher**, Wichita, was chairman of the arrangements committee. **Fred J. McEwen**, Wichita, is the Kansas governor of the American College of Physicians.

Dr. and Mrs. George E. Burket, Jr., Kingman, travelled to Phoenix, Arizona, in January, where Dr. Burket attended a meeting of the Economics and Insurance Commission of the American Academy of General Practice.

George F. Gsell, Wichita, has been reappointed to the Committee on Medical Rating of Physical Impairment of the American Medical Association. Announcement of his reappointment was made in March.

Robert D. Boles, Dodge City, was the guest lecturer at a mental health meeting held in Greensburg in February. Dr. Boles spoke on the behavior of pre-school children.

"Taking Good Care of Your Body" was the subject presented recently by **Edgar A. Beahm**, Independence, to the fifth grade science class at the grade school in that city.

Nellie Walker, director of the City-County health department in Kansas City, spoke at a meeting of the Altar Society of Blessed Sacrament Catholic Church in March.

The Kansas Heart Association sponsored five public education sessions on major heart and blood vessel diseases at their headquarters in Topeka in February. Among those participating in the program were, **Dwight Lawson**, **Newman V. Treger**, **William H. Crouch** and **D. R. Bedford**, all of Topeka.

WELCOME TO SALINA

The members of the Saline County Medical Society are looking forward eagerly to being hosts to the 104th Annual Meeting of the Kansas Medical Society in Salina, Kansas, April 29, April 30, and May 1.

Monday, April 29, is for the sportsman. There will be golf at the Salina and Elks Country Clubs, and skeet shooting at the Salina Gun Club.

The Scientific Program will be held at the new Fine Arts Building at Marymount College. This building has won architectural awards and is probably the most beautiful place in which the Kansas Medical Society will have met. Our program covers an interesting range of subjects with outstanding speakers from Cleveland, St. Louis, and Denver, as well as from Kansas. This will run through Tuesday, April 30, and the morning of May 1.

An outstanding feature of the meeting will be talks by Doctor Edward R. Annis, president-elect of the American Medical Association, on Tuesday noon to the combined Medical Society and Service Clubs at the 4-H Building, and again as the featured speaker at the President's Dinner to be held at the Officers' Club of the Schilling Air Force Base.

The House of Delegates will meet at 7:30 A.M. on Monday, April 29, and on Wednesday noon, May 1, at the Salina Country Club, adjacent to Marymount College.

Several specialty societies will be having their meetings on Tuesday and Wednesday.

The Medical Auxiliary will be holding their meeting simultaneously, and the Medical Assistants Society will be holding theirs on the two preceding days. Don't forget to send your assistants to the latter meeting.

We welcome you and your wives to the fourth largest city of Kansas.

Yours most truly,

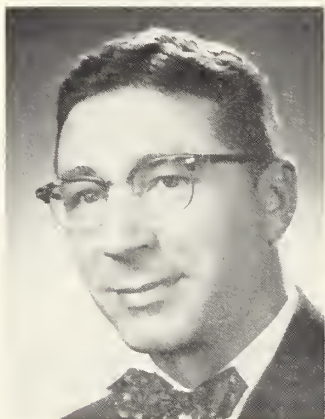
S. C. McCrae, M.D.

President, Saline County Medical Society

104th Annual Session, Kansas Medical Society

Monday, April 29, through Wednesday, May 1, 1963

SCIENTIFIC SPEAKERS



JOHN R. CONNELL, M.D.
Denver, Colorado

Received Bachelor of Science degree in 1939, and Doctor of Medicine in 1943, both from the University of Kansas. Certified by the American Board of Internal Medicine in 1951.

Dr. Humphrey was a resident physician at Cincinnati General Hospital and an Instructor in Pathology at the University of Cincinnati in 1944. In 1948 and 1949, he was a staff assistant at the Cleveland Clinic Foundation and is now staff physician there. He is also head of the Department of Hypertension and Renal Disease, appointed in 1959.

Specialty: Internal Medicine.

Received A.B. degree, Drake University in 1933. Graduated with degree in medicine from Washington University School of Medicine, St. Louis, 1937. Certified by the American Board of Pediatrics, 1948.

After completing six years in the U. S. Army Medical Corps, Dr. Connell became Chief Resident in Pediatrics at Denver Children's Hospital in 1946. Served as Associate Medical Director and then Medical Director of the Denver Children's Hospital. In 1961 was appointed Director of Pediatrics, Denver General Hospital.

Specialty: Pediatrics.



DAVID C. HUMPHREY, M.D.
Cleveland, Ohio



VIRGIL LOEB, JR., M.D.

St. Louis, Missouri

Graduate, Swarthmore College, 1941; received Doctor of Medicine degree from Washington University School of Medicine, St. Louis, in 1944. Certified by American Board of Internal Medicine, 1960.

Dr. Loeb was Instructor in Medicine at Washington University, 1951 to 1953 and Assistant Professor of Medicine, 1953 to 1956. Now Assistant Professor of Clinical Medicine and Assistant Professor of Pathology at Washington University; Assistant Physician and Director of Laboratories and School of Medical Technology at Barnes Hospital, St. Louis.

Specialty: Internal Medicine.

Graduate, University of Berlin Medical School, 1936. After completion of residency in medicine turned to investigative work.

Dr. Reissmann came to the United States in 1947 and worked as a research scientist at the U. S. Air Force School of Aviation. Became an Associate Professor at the University of Kansas School of Medicine in 1951 and is now Professor of Medicine there. Dr. Reissmann is internationally known for his contributions in the discovery of hormone erythropoietin.

Specialty: Internal Medicine.



KURT R. REISSMANN, M.D.

Kansas City, Kansas

Summaries of the Programs

April 29-May 1, 1963 (See Program for Locations)

Hosts for the meetings Page 167

MONDAY, APRIL 29

House of Delegates Breakfast Meeting—7:30 a.m. Page 167
Kansas Medical Golf and Skeet Shooting Association—1:00 p.m. Page 167
Cocktail Hour and Sports Banquet—6:30 p.m. Page 167

TUESDAY, APRIL 30

General Sessions—9:30 a.m. Page 168

Papers by: Virgil Loeb, Jr., M.D.
David C. Humphrey, M.D.

Luncheon—Address by Edward R. Annis, M.D.,
President-elect of A.M.A.—12:00 Noon

General Sessions—2:00 p.m. Page 169

Papers by: John R. Connell, M.D.
Virgil Loeb, Jr., M.D.
Kurt R. Reissmann, M.D.

TUESDAY EVENING Page 169

Reception—University of Kansas Medical Alumni—5:30 p.m.
Annual Banquet—7:00 p.m.
Invocation
Entertainment—Dinner Music—Special Program
Introduction of Guests
Oath of Office to Incoming President
Address by Edward R. Annis, M.D.
Dancing

WEDNESDAY, MAY 1

General Sessions—9:30 a.m. Page 170

Papers by: David C. Humphrey, M.D.
Kurt R. Reissmann, M.D.
John R. Connell, M.D.

House of Delegates Second Meeting—Luncheon—12:00 Noon

Specialty Society Meetings Page 171

Woman's Auxiliary to the Kansas Medical Society Page 174

Kansas Medical Assistants Society Page 175

Hosts for Meeting

Salina Physicians Arranging 1963 Session

GENERAL CHAIRMAN—LAURENCE S. NELSON, JR., M.D.

PROGRAM AND HOST COMMITTEE

Roy B. Coffey, M.D., Chairman

COMMERCIAL EXHIBITS

Laurence S. Nelson, Sr., M.D., Chairman

SCIENTIFIC EXHIBITS

John C. Mitchell, M.D., Chairman

SPORTS EVENTS

Donald L. Marchbanks, M.D., Chairman

PUBLICITY COMMITTEE

Laurence S. Nelson, Jr., M.D., Chairman

Monday, April 29, 1963

HOUSE OF DELEGATES

7:30 Breakfast and Meeting
Salina Country Club (east on Iron
Avenue to end and one block north)

**KANSAS MEDICAL GOLF AND SKEET
SHOOTING ASSOCIATION**

Donald L. Marchbanks, M.D., Salina
James C. Dowell, M.D., Salina
Greens will be available to golfers all day

1:00 Competition Matches
Golf—Salina Country Club (east on
Iron Avenue to end and one block
north)
Shooting—Gun Club (approximately 4
miles west of Salina on Hwy. 40 and
1½ miles south)

6:30 Cocktail Hour-Sports Banquet—Salina
Country Club

TELEPHONE NUMBER MARYMOUNT COLLEGE TAYlor 3-6317

Fine Arts Building, Marymount College

MORNING

7:30 PAST PRESIDENTS' BREAKFAST—HOLIDAY INN

patients in the United States. Evaluation of the need for such vast quantities will be considered in light of our present knowledge concerning indications for transfusion therapy. Discussion of the potential hazards of blood transfusions will be outlined and emphasis placed upon proper use of blood component fractions.

8:00 REGISTRATION—TICKETS—INFORMATION

FINE ARTS BUILDING, MARYMOUNT COLLEGE

FIRST GENERAL SESSION

Spencer C. McCrae, M.D., Salina, *presiding*

9:30 WELCOME TO SALINA

*Spencer C. McCrae, M.D., President
Saline County Medical Society*

9:40 GREETINGS

*Norton L. Francis, M.D., Wichita
President, Kansas Medical Society*

9:50 USES AND ABUSES OF BLOOD TRANSFUSION
THERAPY

Virgil Loeb, Jr., M.D., St. Louis

It has been estimated that approximately 4,500,000 pints of blood are transfused annually to over 2,000,000

10:30 INTERMISSION TO VIEW COMMERCIAL AND
SCIENTIFIC EXHIBITS

SECOND GENERAL SESSION

10:40 SPECIAL STUDIES FOR RENAL HYPERTENSION
David C. Humphrey, M.D., Cleveland

Because occlusive disease of the renal arteries is a frequent cause of hypertension which can be corrected with lasting benefit to the patient, proper evaluation of the various examinations in use, though often difficult, is necessary to establish the diagnosis.

NOON

12:00 LUNCHEON—4-H BUILDING—KENWOOD PARK

Spencer C. McCrae, M.D., Salina, presiding

THE COST OF HEALTH CARE AS IT APPLIES TO SENIOR CITIZENS

Edward R. Annis, M.D., Miami, Florida, President-elect of the A.M.A.

TELEPHONE NUMBER

MARYMOUNT COLLEGE TAYLOR 3-6317

April 30, 1963

Fine Arts Building, Marymount College

AFTERNOON

THIRD GENERAL SESSION

Raymond S. Freeman, M.D., Salina, *presiding*

2:00 HOW TO HANG ON AT TWO POUNDS

John R. Connell, M.D., Denver

Attention has been drawn for many years to survival in the border zone of infantile "viability." Treatment plans to salvage more of these unfinished babies have been widely tested; none yet provides a consistent answer. Premature Centers, most often located in medical school facilities, represent the optimum in care of immature babies as presently known. Since such facilities are not always readily available, the survival expectancy under less favorable conditions should give the practicing physician a more comparable example of what he, with minimal equipment and basic personnel, can accomplish. A review of experiences at a representative general hospital will be presented and comments made on what seem to be important survival factors.

2:35 CHEMOTHERAPY OF MALIGNANT DISEASE

Virgil Loeb, Jr., M.D., St. Louis

The internist and general practitioner are assuming a greater role in the management of patients with malignant disease than has been the practice in the past. With the introduction of various chemotherapeutic drugs which have a definitive effect upon different types of malignant disease, it is now possible to offer patients not only palliation but, in selected cases, considerable clinical improvement lasting many months or years. It is essential that the practitioner be completely familiar with the indications for and the contraindications to the use of the vari-

ous cytotoxic agents which are available and the role of chemotherapy in the management of patients with cancer will be evaluated in this presentation.

3:10 INTERMISSION

FOURTH GENERAL SESSION

Neal M. Jenkins, M.D., Salina, *presiding*

3:30 HYPOXIA AND HYPERCAPNIA: MANIFESTATIONS AND COMPENSATORY MECHANISMS

Kurt R. Reissmann, M.D., Kansas City

Acute hypoxia affects predominantly the central nervous system (impairment of judgment and motor coordination, paralysis of respiratory or vasomotor center). The clinical features depend upon the acuteness of the onset, and in patients with chronic lung disease degrees of hypoxia are not unfrequently present which would be fatal if induced acutely in non-adapted person. Compensatory mechanisms are aimed at increasing the oxygen supply of the tissues through increases in circulating red cell mass, cardiac output, and number of capillaries per unit volume of tissue.

Hypercapnia affects the body through a direct toxic action of CO_2 dissolved in the body's fluids and through lowering of the pH. In acute hypercapnia both these effects are operative, resulting in generalized acidosis, cerebral edema and respiratory failure. In chronic CO_2 retention (emphysema) the pH shift is usually compensated by renal retention of bicarbonate; the toxic effect of high CO_2 tensions is still present, however, and may be worsened by oxygen inhalation. Laboratory findings in compensated and non-compensated respiratory acidosis will be discussed.

EVENING

Annual Banquet—Officers' Club, Schilling Air Force Base

(five miles south of Salina on Hwy. 81)

5:30 RECEPTION—Hosts: Kansas University Medical Alumni Association

7:00 DINNER—Norton L. Francis, M.D., Wichita, *presiding*

Invocation—Reverend R. M. Rymph, Salina

Entertainment—Dinner Music—Special Program

Introduction of Guests—Oath of Office to Incoming President

Address by Edward R. Annis, M.D., Miami, Florida

10:00- 1:00 DANCING

TELEPHONE NUMBER MARYMOUNT COLLEGE TAYLOR 3-6317

Wednesday, May 1, 1963

Fine Arts Building, Marymount College

MORNING

8:00 REGISTRATION—INFORMATION

FIFTH GENERAL SESSION

James E. Roderick, M.D., Salina, *presiding*

9:30 IDIOPATHIC NEPHROTIC SYNDROME IN ADULTS: DIAGNOSIS AND TREATMENT

David C. Humphrey, M.D., Cleveland

The nephrotic syndrome is of special interest at this time because it occurs rather frequently in adults as well as children; precision of diagnosis is possible with renal biopsy, and corticosteroid and nitrogen mustard therapy may favorably affect the prognosis.

10:05 ERYTHROPOIETIN, THE REGULATOR OF RED CELL FORMATION

Kurt R. Reissmann, M.D., Kansas City

The rate of red cell formation is regulated by the hormone erythropoietin, a polypeptide, which is largely formed in the kidney. The hormone reaches the bone

marrow via the blood, and it enhances the differentiation of the pluripotential stem cell into erythroid precursors. The relation of oxygen supply (hemoglobin concentration, arterial oxygen saturation) and oxygen demand (rate of tissue metabolism) seems to govern the rate of erythropoietin formation. The renal formation of erythropoietin has a bearing on two clinical conditions: the anemia of uremia and the polycythemia associated with renal cysts or tumors. Assay methods and clinical implications will be discussed.

10:40 THE DEVIL'S BATTERED CHILDREN

John R. Connell, M.D., Denver

Physical violence against children has aroused widespread, and deserving, concern in the past few years. Although not a new crime, it has developed a new interest in that radiographic and autopsy findings often lend strong support to the clinical impression of wanton cruelty. Physicians now can take a more firm stand in defense of the child who appears to have been the victim of another's rage. Several cases will be reviewed to illustrate the diagnostic criteria, and dilemmas, and a brief discussion of the problem will be presented.

NOON

12:00 LUNCHEON—SALINA COUNTRY CLUB—House of Delegates second meeting

TELEPHONE NUMBER

..... MARYMOUNT COLLEGE TAYLOR 3-6317

Specialty Society Meetings

April 30-May 1, 1963

TUESDAY

EYE, EAR, NOSE AND THROAT SECTION
KANSAS MEDICAL SOCIETY

2:00 BUSINESS AND SCIENTIFIC MEETING

Speaker to be announced

Election of officers

Reports by the Conservation of Hearing
and Speech and Conservation of
Eyesight Committees

Ruth Montgomery-Short, M.D., Halstead,
President

WEDNESDAY

KANSAS WOMEN'S MEDICAL SOCIETY

KANSAS SOCIETY OF ANESTHESIOLOGY

M. R. Nunemaker, M.D., Hutchinson, President

7:30 BREAKFAST AND BUSINESS MEETING
Salina Room, Lamer Hotel

12:30 LUNCHEON—SCIENTIFIC AND BUSINESS
MEETING
Pine Room, Hotel Warren

SPECIAL EVENTS

Monday, April 29

Kansas Medical Golf and Skeet Shooting Association

1:00 p.m. Competition Matches

Golf—Salina Country Club (east on Iron Avenue to end and one
block north)

Shooting—Gun Club (approximately 4 miles west of Salina on Hwy.
40 and 1½ miles south)

6:30 p.m. Cocktail Hour and Sports Banquet—Salina Country Club

BE SURE TO SEND IN YOUR RESERVATION CARDS!

Tuesday, April 30

12:00 noon Luncheon—4-H Building, Kenwood Park

5:30 p.m. K.U. Medical Alumni Association Reception—Officers' Club, Schil-
ling Air Force Base (five miles south of Salina on Hwy. 81)

7:00 p.m. Kansas Medical Society Annual Banquet—Officers Club, Schilling
Air Force Base

ANNUAL BANQUET

Tuesday Evening, April 30, 1963

**Officers' Club, Schilling Air Force Base, Salina
(five miles south of Salina on U. S. highway 81)**

5:30 Reception

**Hosts: Kansas University Medical Alumni
Association**

7:00 Dinner

Norton L. Francis, M.D., Wichita, presiding

**Entertainment—Dinner Music—Special Pro-
gram**

Introduction of Guests

**Installation of H. St. Clair O'Donnell, M.D.,
Ellsworth, as Incoming President of the
Kansas Medical Society**

**Address by Edward R. Annis, M.D., Miami,
Florida, President-elect of the AMA**

10:00- 1:00 Dancing

Banquet Speaker



Edward R. Annis, M.D.

EDWARD R. ANNIS, M.D., Miami, Florida, was named President-Elect of the American Medical Association at its Annual Meeting in June, 1962. He will succeed to the presidency of the 189,000-member association in June, 1963, in Atlantic City.

Doctor Annis, who is a surgeon, served as chairman of the AMA's National Speakers Bureau for a year prior to his election. He has won prominence as a speaker and debater, appearing on nationally televised programs such as "Your Doctor Reports," the AMA's nationally televised program on May 21, 1962.

He was born in Detroit on March 27, 1913. Doctor Annis was graduated from the University of Detroit with a B.S. degree in 1933. Five years later he earned his M.D. degree from Marquette University School of Medicine and began his medical practice in Tallahassee, Florida. In 1948 he moved to Miami, where for ten years he was chief of the Department of General Surgery at Mercy hospital.

For several years he has served as a director of the Family Service and Senior Citizens division of the welfare planning council of Miami. He is chairman of the Florida State Medical Association's Legislative committee and an active member of the Kiwanis and the Dade County Chamber of Commerce, serving on the latter's political action committee.

In 1958 Doctor Annis was awarded the Brotherhood medal of the National Conference of Christians and Jews. In 1961 the Florida State Medical Association gave him the first annual J. H. Robins Co. award for "Outstanding Community Service by a Physician."

Doctor Annis is married to the former Betty McCue Starck. They have eight children, four boys and four girls ranging in ages from 3 to 19 years.

Woman's Auxiliary to the Kansas Medical Society

April 29-May 1, 1963, Lamer Hotel

Monday, April 29

- | | |
|--|---|
| <p>9:30- 4:00 REGISTRATION—Lobby
HOSPITALITY ROOM—Salina Room
EXHIBITS AND AUCTION—Salina Room</p> | <p>1:00 LUNCHEON—Salina Country Club.
Mrs. H. Lee Barry, State President, presiding. Showing of spring fashions.</p> |
| <p>12:30 PAST STATE PRESIDENTS' LUNCHEON—
Marymount College</p> | <p>3:00- 4:30 POST-CONVENTION BOARD OF DIRECTORS MEETING—Salina Country Club</p> |
| <p>2:30- 4:00 PRE-CONVENTION BOARD OF DIRECTORS MEETING—Coronado Room</p> | |
| <p>6:30 DINNER—Brookville Hotel (Nationally famous)—Transportation leaving Lamer Hotel at 6:00</p> | <p>7:00 ANNUAL KANSAS MEDICAL SOCIETY BANQUET—Officers' Club, Schilling Air Force Base. Dr. Edward Annis, President-elect of A.M.A., speaker and special guest.</p> |

Tuesday, April 30

- 8:15-11:00 REGISTRATION—Lobby
Coffee and rolls in Hospitality Room

- 9:00-12:00 GENERAL SESSION—Coronado Room

Wednesday, May 1

- 9:45 BRUNCH—Coronado Room
Surprise Program

TELEPHONE NUMBER

..... MARYMOUNT COLLEGE TAYLOR 3-6317

Kansas Medical Assistants Society

April 27-29, 1963, Lamer Hotel

Saturday Evening, April 27

7:00 REGISTRATION—Lobby

8:00 HOSPITALITY PARTY—"ROARING TWENTIES"
—Courtesy Munns Medical Supply
Company

Sunday, April 28

8:00 EXECUTIVE MEETING—Suites 104 and 105

8:00 COFFEE—Coronado Room
Saline County Medical Assistants

8:00 REGISTRATION—Lobby

10:00 CALL TO ORDER
*Norma Pryor, President
Kansas Medical Assistants Society*

10:05 INVOCATION
Caroline Williams, Salina

10:15 WELCOME
*S. C. McCrae, M.D., President
Saline County Medical Society*

10:25 RESPONSE
*Norton L. Francis, President
Kansas Medical Society*

10:35 BUSINESS SESSION AND ELECTION OF OFFICERS

12:00 PRESIDENT'S LUNCHEON—Coronado Room

1:30 BUSINESS SESSION RECONVENES

2:00 TRAVELOGUE OF THE SOVIET UNION
*The Rev. Dr. George Taylor
University Methodist Church, Salina*

3:00 INFORMATION, PLEASE, ON CERTIFICATION
AND MAXINE WILLIAMS SCHOLARSHIP
FUND

*Marge Slaymaker, Newton
Member of the A.A.M.A.
Certifying Board*

7:00 BANQUET AND ENTERTAINMENT—Salina
Room

Monday, April 29

8:00 COFFEE—Coronado Room

9:00 REGISTRATION—Lobby

9:30 CALL TO ORDER AND ANNOUNCEMENTS
*Norma Pryor, President
Kansas Medical Assistants Society*

9:50 GREETINGS
*Tivila Dorsey, President
Saline County Medical Assistants Society*

10:00 PRESCRIPTIONS FOR TOMORROW
*Fred H. Nielsen or Herman H. Hill
Representatives, Merck Sharp & Dohme*

11:00 VASCULAR SURGERY
George E. Miller, Jr., M.D., Salina

12:30 LUNCHEON—Holiday Inn
INVOCATION—Agnes Agin, Salina
AEROSPACE MEDICINE
*Captain Royce Moser, Jr., U.S.A.F., M.C.
Schilling Air Force Base*
INSTALLATION OF OFFICERS

NOTE: You are welcome to view the scientific exhibits at Marymount College.

TELEPHONE NUMBER MARYMOUNT COLLEGE TAYLOR 3-6317

President and President-Elect

The Major Officers of the Kansas Medical Society

NORTON L. FRANCIS, M.D., *President*

A grateful Society is proud of the exceptional leadership given by Norton L. Francis during this busy and productive year. Few are aware of the hours and days he gave to the Society all through his term and only those who have had a similar experience can understand the constant anxiety and direction required of a president during a three-month legislative session.

To enumerate his achievements is not possible here and a selection of any portion is unfair. But surely a history of Dr. Francis' year must include the period between August and November when the physicians of Kansas exercised their citizenship in behalf of good government as they never have before. This represents a broadened horizon of interest and of service by the medical profession.

Within the Society structure there were accomplishments also. Some projects were concluded, as for example, the revised fee schedule for Workmen's Compensation and the creation of a Joint Voluntary Commission for Standards of Small Hospitals in Kansas to improve patient care. Others were begun by Dr. Francis, such as his appointment of a Committee on Plans and Scopes with a monumental task of exploring ways to increase the efficiency and to improve the effective service of this Society in all its aspects. Nor can the district meeting story be omitted. Through his presentations at these Dr. Francis gave the Society a personality and a meaning. The doctors of Kansas shall always remain in his debt.



H. ST. CLAIR O'DONNELL, M.D., *President-Elect*

This coming year will mark a period of crisis. A most delicate balance of tact and firmness, of understanding and patience will be required of all physicians. If this appears trite, glance for a moment at the known future.

Cooperation with the Legislative Council study of the Healing Arts and Basic Science Boards is but one example. The long, hazardous process of implementing the Kerr-Mills program in this state (should the legislature enact the law) is of grave moment and will require untold hours of most exacting care. Increasing pressure to invoke upon the people of this nation a system of compulsory health care will require the greatest public information program the medical profession has ever undertaken.

The Society, with inspired wisdom, selected H. St. Clair O'Donnell to lead its way this year. His rare understanding and exceptional knowledge will provide direction through these problems toward a stronger Society offering an even greater public service than today.

Councilor Reports

Activities in the Councilor Districts of Kansas

SECOND DISTRICT

District 2 is comprised of the Wyandotte County Medical Society. During the present society year many accomplishments have been made. Our membership has increased materially in spite of the fact that several members were lost through transfer or death.

Among the interesting and constructive operations of the society may be mentioned only a few in this short report. Some are: organization of the speakers' bureau; the approval of the society for a tuberculin skin testing program for children of school age; our support for the establishment of a site for the mid-western water pollution laboratory near the University of Kansas Medical Center; our support to the Mo-Kan alert on Saturday, May 12, 1963; our support of a program relative to the economic needs of children with rheumatic fever and hearing loss, and many others.

Wyandotte County was successful in electing to the position of county coroner one who is fully qualified for the job, in the person of Ralph J. Rettenmaier, M.D., for which we are distinctly proud.

Many interesting meetings were held during the course of this year. Not the least of these was the meeting with the Auxiliary, which was held in May. Mr. Harold Ensley was the guest speaker and spoke on the topic (and illustrated it with pictures) "Fishing Fever." The fall meeting with the Bar Association of this county was likewise quite interesting. Many interesting scientific meetings were also held. Not many serious problems came to our attention.

J. WARREN MANLEY, M.D., *Councilor*

THIRD DISTRICT

This ends a very enjoyable six-year term of office in which it has been my pleasure to serve this district and the Kansas Medical Society.

This year has seen the erection of the new Shawnee Mission Hospital in Overland Park, Kansas. It is a 65 bed general hospital that is serving the community very well.

There has been continued growth of at least two societies without undue trouble or problems.

It is hoped my successor will enjoy this office as much as I have.

G. R. MASER, M.D., *Councilor*

FOURTH DISTRICT

During the past year several problems have come to my attention. These problems have been satisfactorily concluded with the exception of a few which are in the process of being worked out.

AMPAC has brought out the fact that medicine has the potential to be recognized politically and this has been duly demonstrated. AMPAC, a non-political organization, is concerned only with legislation pertaining to medicine. Your councilor is happy to relate that AMPAC was very active in the election. Our new congressman is definitely a friend of medicine and he received the active support of nearly all of our component societies.

I urge each physician to participate in the Fund for Distinguished Medical Teaching program.

Thank you for your cooperation and support during the past year, it has been my privilege to serve you.

DICK B. MCKEE, M.D., *Councilor*

FIFTH DISTRICT

The component medical societies of the Fifth District have brought no major medical problems to the attention of the councilor during this year.

Attendance at the circuit courses, held at Manhattan has been good.

An all-district dinner meeting with the Auxiliary was held November 1, in Manhattan. Dr. Norton Francis, president of the Kansas Medical Society, discussed many of the current problems of Kansas doctors. Mrs. H. Lee Barry, president of the Woman's Auxiliary greeted those present and met with the Auxiliary members. A question and answer period under the capable direction of Mr. Oliver Ebel, executive secretary of the Kansas Medical Society, and his associate, Mr. James Imboden, concluded the meeting.

At present the Fifth District members are very much interested in what implementation of the Kerr-Mills plan will be accomplished by this legislature.

RALPH G. BALL, M.D., *Councilor*

SIXTH DISTRICT

District 6 has been active in many respects during the past year. The membership has been increased by

14 new members and decreased by nine members by death or transfer, leaving a total of 214 as of December 31, 1962.

The district, which is Shawnee County Medical Society, again voted to make the annual assessment of \$15.00 for A.M.E.F. and \$5.00 for Topeka Regional Science Fair per member.

Shawnee County was one of the locations chosen to participate in a United States National Health Survey during April. This survey conducted examinations in one of the survey's mobile units. A rather complete survey was done on a total of 150 adults considered to be cross-sectional for the area. The findings were not disclosed to the individuals examined, but were sent to the doctor designated by the patient for necessary followup. As yet there is not a final summary of the conditions discovered but this is to be sent to the area at a later date.

The society approved the administration of the Sabin vaccine. Members of the society cooperated in a gratifying manner with local and state health departments in accomplishing the administration of the vaccine. This program was begun in December, 1962 and the final type (III) was given on March 10, 1963.

As a part of the community service to our district, a local radio station, KTOP-FM, presented a program entitled "At Your Service." Approximately 20 society members participated in this program. Many medical and related current health subjects were discussed for the benefit of the people of our community.

Our Speakers' Bureau Committee has been active in supplying speakers for lay organizations requesting presentation and explanation of various health subjects.

Shawnee County Medical Society was host and the Medical Auxiliary was hostess for the Annual Health Day in this county. This program is a function of the Shawnee County Agricultural Extension Council. Approximately 300 persons attended the panel discussion on "Arthritis and Venereal Disease."

One meeting which has become an annual affair for the society is the joint meeting of the interprofessional groups. This is a social meeting and includes physicians, dentists, druggists and veterinarians. We feel this is a good way to improve professional relations among the groups involved.

Dr. Guy Finney and Dr. Milton Miller were admitted to membership in the society's honorary 85-50 Club. This group consists of physicians who have attained the age of 85 or have been in the practice of medicine 50 years or more. Dr. Finney and Dr. Miller have served the community well and have distinguished themselves by their professional excellence over the years.

The usual number of monthly meetings have been held and have been well attended. The scientific pro-

grams for these meetings have been most interesting and the program committee deserves a vote of thanks. In addition, a group of our members has presented at each of the meetings a "Case of the Month" and these presentations have added greatly to the members' interest and enjoyment.

The councilor has reported the activities of the Council and of the Kansas Medical Society to the membership of the county society at intervals and much interest has been shown. It is felt that these reports help the membership realize how much they are an integral part of the state Society and have a part to play in policy determinations of the Society.

A special program was given during 1962 for the benefit and instruction of members of the police and fire departments, ambulance attendants and others. This program was centered about poison cases, and the handling of such cases until the patient could be hospitalized or a doctor was in attendance. There will be further programs on other phases of emergency medical care for this same group of people during 1963.

Several projects are now under way in the society. These include civil defense and disaster planning. As these programs are developed, the information will be made available to the membership.

The society again underwrote the cost of 31 subscriptions to *Today's Health* which were presented to the schools and libraries of this community.

I feel that though there may not have been a great number of projects during the past year, those on which we have worked have been highly successful and beneficial to the membership of the society as well as to the general population. In this way, our district is helping to serve our community to the best of our ability.

F. T. COLLINS, M.D., *Councilor*

SEVENTH DISTRICT

The Seventh District has faced no unusual problems this past year and, as before, the relationship between the component county groups and the individual physicians has been characterized by an exemplary friendliness.

There has been good attendance at the postgraduate courses held in Emporia.

If we have a problem, it consists of the fact that nearly all of our meetings are devoted entirely to business matters rather than scientific presentations, yet these business problems are important and I see no lessening of the time allotted to them in the future.

Since the last councilor report, we have organized the Flint Hills District Medical Society composed of the following counties: Morris, Osage, Greenwood,

Chase and Lyon. This has proved to be a most happy arrangement and we are now in the process of preparing a constitution for this combined group.

We were honored to have Dr. Norton L. Francis, president of the Kansas Medical Society; Mrs. Wilma Barry, president of the Woman's Auxiliary to the Kansas Medical Society, and Mr. James S. Imboden, executive assistant to the Kansas Medical Society, and his wife, as our guests at a meeting November 6 at the Ranch House Motel. Following a social hour and dinner, the Flint Hills District Society met with Dr. Francis and Mr. Imboden for a most instructive session. The Flint Hills District Woman's Auxiliary met with Mrs. Barry. It was a most successful evening.

It is a pleasure to be a councilor for the Seventh District.

JOHN L. MORGAN, M.D., *Councilor*

EIGHTH DISTRICT

The component medical societies of the Eighth District presented no problems or requests for action on the part of their councilor during the past year.

The interprofessional relations with the allied professions continues to be very harmonious. The Butler County Society continues to hold its yearly meeting with the Butler County Bar Association with increased good feeling between the groups.

The past year society meetings in Butler and Cowley Counties have been well attended with excellent programs. The circuit course from the Medical Center, held this year in Arkansas City, has had the largest attendance since its inception, with an excellent attendance from the adjacent counties in Oklahoma.

An Eighth District meeting was held in November in Winfield with Cowley County as the host county. Representatives were present from all counties of the district. Mrs. H. Lee Barry, president of the Auxiliary, Dr. Norton L. Francis, president of the Kansas Medical Society and Mr. Jim Imboden of the executive office discussed the current problems and answered questions.

I wish to thank all the members of the Eighth District for their interest in furthering Kansas medicine.

J. GORDON CLAYPOOL, M.D., *Councilor*

NINTH DISTRICT

This councilor district has been somewhat disturbed by some activities at the State Legislature. This area has always felt that care of indigent patients should be the duty of the local people, and that the county commissioners should administer welfare money. This county has supported the Kerr-Mills Bill but has not

been in favor of several things about it. The thing that this county dislikes the most is the administration of the plan by the State Welfare Director. It seems, however, that in order to implement passage of the Kerr-Mills Bill that this area must give ground on this point.

It also disturbs the doctors in this area to feel that the Blue Cross-Blue Shield Boards are threatened. The present membership of both Boards is democratic as anything can be, particularly when the new method of selecting directors will be carried out. This new method, consisting of the election of the members of the Board of Directors in each district by all the doctors, is also democratic. Impending legislation would completely destroy the make-up of the Boards as far as democracy is concerned and would make both of them political appointments.

In general, things have been fairly peaceful. In this district, there was a successful meeting of the doctors and wives of the area, held at the Holiday Inn in Salina. Dr. Norton L. Francis presented an excellent talk on some of the problems and ideas of the Kansas Medical Society. This was well received by all members who heard his presentation. It is hoped that when the next meeting of this type is held, more members of the district from other towns will attend.

L. S. NELSON, JR., M.D., *Councilor*

TENTH DISTRICT

The Tenth District has faced no unusual problems this past year. The professional relationship between the individual doctors has never been higher. The Tri-County Medical Group still holds meetings which are well attended. Much interest in public relations at a local level is being shown.

There has been good attendance at the postgraduate courses held in Hutchinson.

I have attended all council meetings this year, and now the pitch is from blocking Forand-type legislation to implementation of Kerr-Mills. Even though this is a medically sponsored bill, we find ourselves defending our position and trying to make our ideas about implementation known to the Kansas Legislature. Indigent care only appears to grow and it is hoped in our district it will remain largely a Social Welfare problem.

During the past year our Medical Auxiliary has continued to donate much attention to public relations and safety programs at a public school level.

It has always been a real pleasure to be a councilor for the great Tenth District. This councilor wishes to express at this time his gratitude to all who have cooperated with him during the past several years. May we see you all at the State Meeting in Salina.

JOHN N. BLANK, M.D., *Councilor*

ELEVENTH DISTRICT

As councilor of the Eleventh District of the Kansas Medical Society, I am pleased to report a most outstanding year. We are celebrating our 60th year as an organized medical society and component of the parent Kansas Medical Society organization. Joining the other doctors in Kansas, we spent the first part of the year in an urgent battle against the King-Anderson Bill which was attempting to socialize medicine. Our society was joined in this fight by many other professional and lay organizations in the county, and it is felt that we were instrumental in carrying medicine's story to the populace of our district. For example, following President Kennedy's speech at the Madison Square Garden Old Age Rally, our members sent 75,000 personally signed letters to their patients, giving them medicine's points on Medicare. Assisting us in our activity against Medicare and other general activities has been the Auxiliary of the Medical Society. They have been of great help to us in achieving many of our goals.

The district has made a concerted effort to improve the physician's community relations and to enhance the over-all public relations image of medicine. In this realm, we have been involved in various community and civic campaigns. One of the most noted of these was the Science Fair in which we joined the University of Wichita in sponsoring 150 young scientists.

The most outstanding program for the year, from both a medical and public relations standpoint, was the recently completed STOP campaign. The medical society sponsored an oral anti-polio campaign which was given the title of "Sedgwick's Triumph Over Polio." This campaign was directed by an executive committee composed of outstanding citizens from the Wichita community. The main coordinating and planning of this program was done by our Executive Director, Mr. Dallas Whaley. His outstanding capabilities in handling the drive resulted in an over-all immunization level from 75 to 85 per cent of the community. This program has been heralded by the local news media as being the first campaign of this size and scope to have ever taken place in Sedgwick County. The society has received letters of praise from many individuals congratulating them upon taking the initiative and responsibility for seeing this drive through. More than 150 of my fellow practitioners participated in this program.

The society has continued its monthly scientific programs throughout the year and has had outstanding speakers in medicine from the four corners of the United States.

I would like to express my appreciation to the 350 members of the Sedgwick County Medical Society for their support and cooperation in helping me to carry out my delegated responsibilities during the year.

Also, I would like to thank the two presidents of our society, Dr. G. F. Gsell and Dr. H. C. Blaylock, who have served most excellently during this past fiscal year.

I am looking forward to another outstanding annual meeting of the Kansas Medical Society and in joining in the fellowship of this fine organization at that time.

WILLIAM J. REALS, M.D., *Councilor*

TWELFTH DISTRICT

The Twelfth District is happy to report that everything is well. We were greatly enthused with the support of the AMPAC and KaMPAC Program this first year as it was well accepted by the membership.

The highlight of the year was our council meeting at Harper in November. We were honored by the presence of Mrs. H. Lee Barry, Auxiliary State President and Dr. H. St. Clair O'Donnell, president-elect of the Kansas Medical Society, and his charming wife, Mrs. O'Donnell, of Ellsworth. Following dinner, which was shared by our wives, Dr. O'Donnell reviewed current legislation and other important matters concerning the Society while Mrs. Barry greatly influenced the wives with her informative talk on the aims and objectives of Auxiliary.

We are grieved by the passing of one of our charter members of the South Central Tri-County Society, Dr. L. C. Joslin of Harper. Dr. Joslin was instrumental in the organization of our Tri-County in 1953 and he served as its first president. His faithful attendance and stalwart leadership will be missed by the entire Medical Society. To Thelma, we extend our deepest sympathy.

L. W. PATZKOWSKY, M.D., *Councilor*

THIRTEENTH DISTRICT

Medical affairs in District 13 remained relatively quiet during the past year. We still suffer loss of physicians for various reasons, with replacements and new doctors still difficult to obtain. One small flurry of questionable ethical medical activity occurred, but this was resolved without any official action required.

Members of the district continue to be active in political and other paramedical fields, with gratifying results in the recent elections. Special mention must be made of Millard Schulz of Russell, for his active work in behalf of the best medical practices and precepts.

A. M. CHERNER, M.D., *Councilor*

SIXTEENTH DISTRICT

Northwest Kansas Medical Society postgraduate meetings have continued to be very well attended

and have served as our "life-line" in keeping us posted on what's new in medicine, and what is new about our members' activities. They have served as our only means of conducting snappy society business meetings during the social hour and supper. We are planning one extra-curricular meeting in the fall, at which we hope to have a few University notables in attendance.

We have had a few new members added to our society and no deaths. There is still a net shortage of general and specialty physicians for our area.

We are pleased by the proposed use of the Norton Sanatorium for mental invalids, and hope it will lead to the eventual establishment of a psychiatric center. A Norton County Mental Health Association was organized two years ago and is becoming quite active in promoting public mental health meetings.

All of our counties have had a good polio immunization campaign and Norton County was listed as one of the most successful in the state.

Our representatives attended the Blue Shield meeting in Wichita. This proved to be immensely informative by very reputable speakers. They discussed the future full coverage service plans and Schedule No. 3, which was previously approved by our Society.

It behooves all of us to become better informed on the plans which are possible for full medical coverage of all the people. We must find means to give full care to the aged immediately, before the government uses this as a wedge to begin socializing all medical care. At present no insurance plan is even close to a solution. This makes it doubly important that Blue Shield remain strictly under control of physicians, who can work out an equitable fee scale for full coverage care. It is now evident that we must do this through unselfish sacrifice of services if we are to keep it out of government social welfare hands.

It is only by constructive criticism and cooperation that we can win this battle.

EDWARD F. STEICHEN, M.D., *Councilor*

KANSAS STATE BOARD OF HEALTH

TOPEKA, KANSAS

Division of Preventable Diseases—Division of Vital Statistics—Kansas Morbidity Incidence

Summary of Cases Reported in December 1962 and 1961

And Cumulative Totals for the Twelve Months of 1962 and 1961

<i>Disease</i>	1962	<i>December</i>		<i>January to December Inclusive</i>		
		1961	<i>5-Year Median 1957-1961</i>	1962	1961	<i>5-Year Median 1957-1961</i>
Amebiasis	9	2	3	93	42	53
Aseptic meningitis	1	9	*	35	22	*
Brucellosis	4	9	4	26	55	65
Cancer	343	531	652	4,225	4,548	5,364
Diphtheria	—	—	—	1	—	2
Encephalitis, infectious	2	4	2	25	31	40
Gonorrhea	198	204	199	2,287	2,794	2,046
Hepatitis, infectious	12	47	18	422	743	265
Meningitis, meningococcal	—	4	4	14	18	18
Pertussis	5	1	4	44	26	67
Poliomyelitis	—	—	—	—	8	34
Rheumatic fever	1	—	—	11	4	3
Salmonellosis	4	10	*	328	79	*
Scarlet fever	29	105	30	484	1,052	557
Shigellosis	2	3	3	68	137	33
Streptococcal infections	54	225	16	1,228	1,560	772
Syphilis	81	122	99	1,153	1,250	1,401
Tinea capitis	8	22	22	133	136	238
Tuberculosis	28	12	24	270	275	362
Tularemia	9	1	2	22	15	28
Typhoid fever	—	—	—	—	3	4

* Statistics on 5-Year Median not available.

Committee Reports

Activities of the Committees of the Kansas Medical Society

ANESTHESIOLOGY

R. T. Parmley, Wichita, Chairman; H. J. Brown, Winfield; W. E. Enders, Kansas City; E. L. Frederickson, Kansas City; F. A. Garlock, Great Bend; P. A. Godwin, Lawrence; W. P. Hibbett, McPherson; G. C. Hutchison, Hays; H. H. Hyndman, Wichita; M. R. Knapp, Wichita; G. Mailman, Wichita; W. O. Martin, Topeka; M. E. Nunemaker, Hutchinson; W. F. Powers, Wichita; E. M. Sutton, Salina; E. T. Wulff, Atchison.

The Committee on Anesthesiology completed drafting an anesthesia mortality questionnaire and late in 1962 mailed these questionnaires to chiefs of surgery in all Kansas hospitals.

These questionnaires are now being returned and depending upon the results, the committee would hope to determine whether or not a mortality study group similar to the one conducted by the Maternal Welfare Committee should be recommended for the approval of the House of Delegates at the time of the Annual Meeting in Salina. If the Committee is able to do so, a supplemental report will be made at that time.

R. T. PARMLEY, M.D., *Chairman*

AUXILIARY

T. P. Butcher, Emporia, Chairman; H. L. Barry, Wichita; V. E. Brown, Sabetha; J. G. Claypool, Howard; L. G. Glenn, Protection; J. B. Jarrott, Hutchinson; C. M. Lessenden, Jr., Topeka; E. B. Scagnelli, Dodge City; L. E. Vin Zant, Wichita.

The purpose of this committee is to cooperate with the Woman's Auxiliary on any project the Auxiliary might wish to bring to the attention of the Medical Society. This committee in turn brings suggestions from the Medical Society to the membership of the Auxiliary.

This past year no formal committee meetings were held, however, the Chairman and the Executive Staff cooperated and are cooperating with Auxiliary members on a number of projects.

The district meetings initiated last year by the Auxiliary were held this year in 13 councilor districts, an increase of two districts over the program's first year. Much of the credit for the success of these meetings belongs to the councilors who select the date for the meeting and work out all the many other necessary arrangements.

District meetings will be held this year from September through January.

Mr. Imboden and I were invited to attend the Fall Conference which was held last September in Wichita. I reported on the importance of the Medical Assistants circuit courses and Mr. Imboden spoke on "Legislation of Interest to the Medical Society in the 1963 Kansas Legislature" and "Political Activities for the Auxiliary in General Elections."

Committee members and the Auxiliary are at this time working for a successful annual meeting.

T. P. BUTCHER, M.D., *Chairman*

BLUE SHIELD RELATIONS

H. R. Schmidt, Newton, Chairman; C. W. Bowen, Topeka; A. M. Cherner, Hays; O. R. Cram, Jr., Larned; C. W. Erickson, Pittsburg; G. W. Fields, Scott City; W. H. Fritzemeier, Wichita; K. L. Graham, Leavenworth; P. E. Hiebert, Kansas City; H. P. Jones, Lawrence; K. L. Lohmeyer, Emporia; J. R. Neuenschwander, Hoxie; B. G. Smith, Arkansas City; E. A. Walsh, Onaga; E. R. Williams, Dodge City; S. Zweifel, Jr., Kingman.

A symposium was held on "Medicine's Expectations of Blue Shield" in early March in Wichita and many members of this committee were present. Also in attendance were members of the Council, the Fee Committee, the Blue Shield Board, and many other interested physicians from around the state. The presentations and discussions covered the origin of Blue Shield and relationship of Blue Shield to the Kansas Medical Society, the development of the Butler County Plan (now more widely known as Schedule 3) and the importance of the Service Benefit concept to Blue Shield and Medicine. Many fine speakers provided a wealth of information about local and national problems during the busy sessions.

A series of district meetings are being held in March and April to discuss the activities of Blue Shield that have taken place during the year, a new major medical plan for the over age 60 population (Series 60) which has just been made available and nomination of physicians to serve on the Blue Shield Board from districts 7, 8, 11, 12, and 16.

Last year the membership of this committee was expanded to include three representatives from each of the Councilor Districts. The change reflected the interest shown by many physicians in the affairs of Blue Shield and also provides better representation when the committee is in session.

H. R. SCHMIDT, M.D., *Chairman*

CHILD WELFARE

R. L. Dreher, Salina, Chairman; S. C. Averill, Topeka; H. V. Bair, Parsons; M. J. Blood, Wichita; R. D. Boles, Dodge City; A. C. Cherry, Topeka; W. H. Crouch, Topeka; D. R. Davis, Emporia; L. W. Hatton, Salina; T. C. Hurst, Wichita; A. C. Irby, Fort Scott; G. F. Jordan, Jr., Wichita; F. Law, Ellinwood; W. F. McGuire, Wichita; J. H. McNickle, Ashland; M. B. Obenschain, Winfield; E. T. Olson, Newton; P. T. Schloesser, Topeka; R. N. Shears, Hutchinson; J. H. Smelker, Topeka; L. N. Speer, Kansas City; T. E. Young, Topeka.

I reported last year that in March Dr. J. A. Budetti, chairman of the Committee on Conservation of Hearing and Speech; Dr. W. H. Crouch, chairman of the Perinatal Welfare Committee; and I, appeared before the Public Health Committee of the Kansas Legislative Research Council to discuss a resolution from the 1961 legislative session which directed the Kansas Legislative Council make a study for the purpose of determining the advisability of the enactment of legislation which would provide for the creation of a council for the purpose of coordinating programs for handicapped children.

As a result of this hearing at which other interested public and private agencies also testified, a bill was introduced in the House of Representatives by the Committee on Public Welfare which calls for a coordinating council for handicapped children. This bill known as House Bill 87 provides for the appointment of eleven persons, most of them heads of state departments working in this field, to serve on this council. At this time the bill is in the Public Welfare Committee of the Senate having passed the House of Representatives. A supplemental report will be made to the House of Delegates at the annual meeting in Salina as to whether or not the bill has become law.

R. L. DREHER, M.D., *Chairman*

CONSERVATION OF EYESIGHT

D. O. Howard, Wichita, Chairman; B. J. Ashley, Topeka; H. L. Bryant, Coffeyville; M. A. Carter, Wichita; E. M. Harms, Wichita; M. S. Lake, Salina; A. N. Lemoine, Jr., Kansas City; C. T. McCoy, Hutchinson; H. L. Patterson, Larned; R. C. Polson, Great Bend; R. R. Preston, Topeka; W. M. Scales, Hutchinson; E. T. Siler, Hays; D. P. Trimble, Emporia; H. E. Watts, Hays.

Several problems have arisen during the course of the previous year of interest to this committee. These were discussed individually through correspondence or by telephone conversation with numerous members of the committee. They were also rather generally discussed at the time of the postgraduate program on Ophthalmology conducted at the Uni-

versity of Kansas School of Medicine. For these reasons, no formal meeting of the committee was held.

The chairman has been consulted upon a number of questions, some of which related to specific, others to generalized, problems in the area of eye services. It is the belief of your chairman that each of these problems was solved in accordance with the wishes of the committee and in keeping with general policy of the Kansas Medical Society.

An item of major interest to this committee concerned some legislative effort to make physicians legally responsible for reporting defective eyesight to the Bureau of Drivers' Licensing of the State of Kansas. Byron J. Ashley, M.D., of Topeka, a member of this committee, appeared on at least two separate occasions before committees of the legislature to express the view of this committee and of the Medical Society in this regard. He stated that defective vision was only one element to be considered in the general area of physical fitness and that issuing or denying the right for a person to drive on the basis of a single set standard of vision was approaching only a small segment of an important problem and was approaching this in terms of something less than the best possible way.

As a result of Dr. Ashley's testimony, the legislative committee is giving further consideration to the problem of what constitutes physical fitness for driving and this committee will continue to cooperate with legislative efforts to resolve this question.

D. O. HOWARD, M.D., *Chairman*

THE COUNCIL

The minutes of all meetings of the Council and of the Executive Committee held during the year have been reviewed. Since the minutes of the Executive Committee are regularly submitted to the Council for adoption, all actions recommended by the Executive Committee actually represent Council approved recommendations. The numerous items discussed are not recorded here but are available for examination upon request. Listed below are those items recommended by the Council for consideration by the House of Delegates.

RESOLUTION No. 1

WHEREAS, the implementation of the Kerr-Mills Bill for the State of Kansas has been endorsed by the House of Delegates, and

WHEREAS, the Council has throughout the year and especially while the Kansas legislature was in session, reviewed basic principles upon which the medical profession might agree relating to health care of the aged and implementation of the Kerr-Mills bill, and

WHEREAS, the Council has formulated eight basic policies relating to the cost of illness for Society en-

dorsement as a guide in the development of programs related to the cost of illness, therefore be it

Resolved, that the following eight basic policies be adopted as Society policy.

1. Personal medical care is primarily the responsibility of the individual. When he is unable to provide this care for himself, the responsibility should properly pass first to his family, then to the community, the county, and the state. Only when all these fail should the Federal Government be called upon, and then only to function in conjunction with the other levels of government, and in the order listed above.

2. The principle of freedom of choice should be preserved for all health services.

3. The prepayment or insurance principle will best protect the individual against the costs of medical care. Such programs should provide a broad range of benefits and should be available to persons of all ages.

4. Persons financially able to prepay their own expenses should be expected to do so, but should be encouraged rather than compelled to do so.

5. The medical profession has an obligation, together with the Department of Social Welfare, to provide the indigent of this state with necessary health care at maximum fiscal efficiency.

6. The sections of the Kerr-Mills law concerned with Medical Assistance for the Aged are intended to provide health services to those individuals who are not otherwise eligible for or in need of public assistance, but who would be forced to seek such assistance in the event of extended or catastrophic illness. It is not the intention of the law that such funds would replace the state financing of existing programs, or replenish general funds.

7. Medical Assistance for the Aged under the Kerr-Mills law is intended to supplement, rather than to replace, individual prepayment or health insurance.

8. Medical Assistance for the Aged under the Kerr-Mills law should provide any type of treatment or facility medically necessary to the individual's care, but only to the degree that the costs of those services if paid from the individual's resources would cause such reduction in his standard of living as to require him to apply for public assistance.

RESOLUTION No. 2

MEDICAL ASSISTANCE FOR THE AGED UNDER THE KERR-MILLS LAW

WHEREAS, the Council has endorsed certain specific principles for the implementation of the Kerr-Mills law in this state, therefore be it

Resolved, that the following statements be adopted as Kansas Medical Society policy in this regard.

1. Because Medical Assistance for the Aged is designed to protect the individual from the necessity of accepting Old Age Assistance, the administration of the two programs in Kansas should be separate to such degree that this fact is instantly and permanently apparent.

2. Benefits should be provided in sufficient quantity to ensure the recipient of MAA that the cost of health care will not necessitate a reduction in his standard of living for the duration of his eligibility.

3. Eligibility should contain deductible requirements after which MAA would cover the total cost. Deductibles should vary with personal resources, except that premium payments for health insurance would serve to satisfy deductible requirements.

4. A pilot study should constitute the original implementation of MAA. It is recommended that the Legislature designate an appropriate agency which shall administer MAA as a separate division from OAA. In order that this law may equitably serve all potential recipients, it is advised that local administration offices be established in each county.

5. The Kansas Medical Society concurs with the Governor of Kansas in his recommendation that the 1963 Legislature authorize an increase of one mill in the county welfare levy to aid in financing a program of MAA for Kansas. The Legislature should establish a certain fraction of this additional one mill levy to be identified for the exclusive use of MAA.

6. The Kansas Medical Society will cooperate with the Governor, with the Legislature and the officially designated agency at the state and county levels to bring the people of this state a sound MAA program with the greatest possible economy in cost.

RESOLUTION No. 3

KAMPAC

WHEREAS, the Council has reviewed the activities of the Board of Directors of KaMPAC, and

WHEREAS, the Council believes each physician should express his interest in good citizenship in many ways including his participation in KaMPAC, therefore be it

Resolved, that the Kansas Medical Society recommends to the Board of Directors of KaMPAC that this organization and its work be continued, and

Be It Further Resolved, that the Board of Directors of KaMPAC be invited to present an audit of members to each meeting of the Council and at each meeting of the House of Delegates.

RESOLUTION No. 4

E.R.F. AND THE KANSAS MEDICAL SOCIETY STUDENT LOAN FUND

WHEREAS, the Kansas Medical Society as an organization and its individual members have over the years contributed to a student loan fund for the medical students at the University of Kansas School of Medicine, and

WHEREAS, many students are now utilizing loans from this fund in the furtherance of their professional education, and

WHEREAS, this money is being returned and reutilized and being made available to students at a very low rate of interest, and

WHEREAS, the newly created AMA sponsored E.R.F. loan program is a national project, therefore be it

Resolved, that E.R.F. is a nationally sponsored project about which physicians throughout the nation receive their information from the American Medical Association and those wishing to do so shall contribute directly to the American Medical Association without the Kansas Medical Society entering into this project, and

Be It Further Resolved, that the Kansas Medical Society shall continue its interest in the Kansas Medical Society student loan fund because this is money locally raised to be used by students at the University of Kansas School of Medicine and that contributions to this fund will continue to be accepted.

RESOLUTION No. 5

WHEREAS, during recent months at least two multi-county district societies have been organized, and

WHEREAS, these appear to be functioning successfully to the added advantage of the membership in the area involved, and

WHEREAS, there still remain within this state several small component societies, and

WHEREAS, the by-laws adopted by the House of Delegates recommend the formation of multi-county societies, therefore be it

Resolved, that the House of Delegates once again express its hope that small county medical societies will unite into district societies, and

Be It Further Resolved, that the Executive Office again advise these county medical societies of such recommendations on behalf of the House of Delegates.

RESOLUTION No. 6

WHEREAS, the School of Osteopathy at Los Angeles has recently been converted to a medical school which action granted degrees of doctor of medicine to the graduates of the Los Angeles School of Osteopathy, and

WHEREAS, such degrees of medicine are at this time recognized only in the State of California, and

WHEREAS, the Menninger School of Psychiatry at Topeka has received at least one application from a doctor of medicine in California having been granted his license by reason of the changed status of the Los Angeles School of Osteopathy, a request to be enrolled for residency training in psychiatry at the Menninger School, and

WHEREAS, the Menninger School of Psychiatry submitted this question to the Council for a decision as to whether such students should be accepted, therefore be it

Resolved, that the Council referred this question without recommendation for a decision by the House of Delegates.

The above items were selected from the minutes of the Executive Committee and of the Council held during the past year as representing questions that might alter or add to the policy of the Kansas Medical Society and are respectfully submitted for consideration to the House of Delegates.

NORTON L. FRANCIS, M.D., *President*

CONSERVATION OF HEARING AND SPEECH

H. R. Draemel, Salina, Chairman; C. W. Armstrong, Salina; J. A. Budetti, Wichita; D. J. Cronin, Wichita; R. L. Dunlap, Lawrence; E. S. Gendel, Topeka; J. H. Gilbert, Seneca; C. L. Gray, Wichita; C. T. Hinshaw, Wichita; V. R. Moorman, Hutchinson; W. D. Pitman,

Pratt; G. O. Proud, Kansas City; R. G. Montgomery-Short, Halstead; C. H. Steele, Kansas City; M. F. Stock, Pittsburg.

Chief accomplishment of the 1962 to 1963 year was the implementation of the hearing screening program for school children in counties which previously had no means of discovering or determining the individual students who may have a decreased hearing acuity. After this determination is obtained, a referral to the family physician is possible and if the family physician so desires then further referral to an otologist may be made. This has chiefly been accomplished through a Health, Education and Welfare grant to the Division of Maternal Health and Child Welfare of the Kansas Department of Health for audiologic testing equipment, and a full time staffing by an audiologist, public health nurse and secretarial assistants.

This program is the natural follow-up on last year's very competent chairman's contacts with the Subcommittee on Hearing of the American Academy of Ophthalmology and Otolaryngology Committee on Conservation of Hearing: Whereby their field studies are brought to Kansas as a part of the national survey.

The committee was able to further evaluate the completed referral cards for reporting of hearing loss in cooperation with the Department of Public Instruction and the Board of Health, and indicates that these cards are of great help to both the schools and to the vital statistics studies of the Medical Society, Department of Public Instruction and the Department of Public Health.

Second in importance was the committee's search for methods of case-finding and parent education in the pre-school child as young as one to two years of age. Still under discussion are methods of distribution of pamphlets as well as the format of such pamphlets for parent education. This is being worked out in cooperation with the Bureau of Child Research of the University of Kansas as well as the Division of Maternal Health and Child Welfare of the Department of Health.

The committee recognizes and highly approves the current study by the Legislative Research Council of the legislature regarding the advisability of extending the Crippled Children's Commission's activity to include hearing loss as a handicapping disease requiring their attention and support. The committee recognizes the need of indigent children in both the diagnosis and treatment of the partially handicapped child as distinguished from the totally deaf. In addition there is an undetermined need for support in the educational training and possible equipment with prosthesis such as hearing aids.

The committee is seeking ways to acquaint all the physicians in the State of Kansas with the school referral card on hearing and to promote into acceptance

by the physicians insofar as possible. Plans are under way for personal visits to the various county medical societies if invitations from the county groups can be stimulated.

The committee is encouraging the establishment of courses for audiologists in the Department of Public Education, The State Board of Health, in industrial locations, and in doctors' offices. Two such courses in methods in audiometric testing has been offered this semester in Topeka and Salina under the auspices of the Speech and Hearing Programs of the Division of Special Education of the Department of Public Instruction, plus a two week workshop in such methods offered by Fort Hays College last June.

H. R. DRAEMEL, M.D., *Chairman*

CONTROL OF TUBERCULOSIS

J. K. Fulton, Wichita, Chairman; A. L. Ashmore, Wichita; A. Baude, Topeka; J. Brown, Chanute; R. I. Canuteson, Lawrence; P. R. Carpenter, Kansas City; R. F. Conard, Emporia; G. E. Finkle, McPherson; B. Goldblatt, Kansas City; W. E. Hird, Wichita; I. S. Kwak, Norton; A. J. Laham, Wichita; D. S. Lowe, Hiawatha; J. L. Morgan, Emporia; J. M. Mott, Topeka; C. Pokorny, Halstead; W. A. Smiley, Jr., Goodland; F. A. Trump, Ottawa.

The Committee on Control of Tuberculosis met once during the past year on February 24, 1963, in Emporia. Eleven persons were present to discuss the following items of business. The committee voted unanimously to go on record as endorsing House Bill 126 by the Committee on Public Health of the House of Representatives. This bill would require a physical examination of all school employees, including teachers, upon employment and at least every three years or more often if necessary. The certification of health shall include a statement that there is no evidence of a physical or mental condition that would conflict with the health, safety or welfare of the pupils and that there is freedom from tuberculosis. At the time of the writing of this report, House Bill 126 had passed the House and was on general orders in the Senate. The committee also discussed Senate Bill 58 and House Bill 63. Dr. I. S. Kwak reported briefly on these, telling the committee that these were basically the recommendations of the Legislative Research Council before which he and others had appeared in regard to the Norton Sanatorium. It was felt at the time of this meeting that these bills would probably pass both houses and were endorsed by the Committee on Control of Tuberculosis.

The committee heard a rather complete report on chest clinics in Kansas from Kansas State Board of Health representatives who were present for the meeting. It was moved by the committee that Wichita be recommended for a chest clinic if such clinic is

felt to be needed by physicians and health department people in that area.

The Kansas State Board of Health representatives asked the committee's feelings about the possibility of taking one of the mobile x-ray units out of circulation replacing this with personnel to follow up on chest x-rays. It was pointed out that one unit could probably be successfully utilized to do the job of two units. The committee unanimously agreed that both units should be kept in circulation if at all possible and that additional funds be obtained to provide some follow up.

The committee then heard reports from Dr. James Brown of Southeast Kansas Tuberculosis Hospital at Chanute, and Dr. I. S. Kwak of the State Sanatorium for Tuberculosis at Norton, in regard to their respective institutions. Both reported operating conditions most satisfactory.

J. K. FULTON, M.D., *Chairman*

DEFENSE BOARD

L. S. Nelson, Sr., Salina, Chairman; C. M. White, Wichita; J. A. McClure, Topeka.

The Defense Board has not found it necessary to have a meeting during this year. We have functioned individually in an advisory capacity in a few instances.

Our chief concern has been an effort to improve consent forms in offices and hospitals. Informed consent has become more pertinent since the Kansas Supreme Court made its historic ruling. A copy of the best one available was published in the January, 1961, issue of the JOURNAL OF THE KANSAS MEDICAL SOCIETY and can be acquired from our central office.

Just as the JOURNAL goes to press the Supreme Court of Kansas modified its previous ruling on informed consent. In this instance the plaintiffs based their case upon the informed consent doctrine and the Supreme Court took this opportunity to explain in some detail what this doctrine shall mean in Kansas. The two paragraphs from this more recent decision discussing that subject follow.

... "At the outset it may be stated that all of the parties rely on our recent case of *Natanson v. Kline*, 186 Kan. 393, 350 P. 2d 1093, rehearing denied 187 Kan. 186, 354 P. 2d 670, the parties seeking to place a different construction on what was said with reference to informed consent. We said in the *Natanson* case at page 406 it is the duty of a doctor to make a reasonable disclosure to his patient of the nature and probable consequences of the suggested or recommended treatment, and to make a reasonable disclosure of the dangers within his knowledge which are incident or possible in the treatment he proposes to administer. But this does not mean that a doctor is under an obligation to describe in detail all of the

possible consequences of treatment. To make a complete disclosure of all facts, diagnoses and alternatives or possibilities which might occur to the doctor could so alarm the patient that it would, in fact, constitute bad medical practice.

"Further, on pages 409-410, we said the duty of the physician to disclose, however, is limited to those disclosures which a reasonable medical practitioner would make under the same or similar circumstances. How the physician may best discharge his obligation to the patient in this difficult situation involves primarily a question of medical judgment. So long as the disclosure is sufficient to assure an informed consent, the physician's choice of plausible courses should not be called into question if it appears, all circumstances considered, that the physician was motivated only by the patient's best therapeutic interests and he proceeded as competent medical men would have done in a similar situation." . . .

L. S. NELSON, SR., M.D., *Chairman*

DIABETES

J. W. Schmaus, Wichita, Chairman; G. E. Finkle, McPherson; H. S. Foutz, Minneapolis; B. Goldblatt, Kansas City; T. J. Luellen, Wichita; B. M. Matassarín, Wichita; L. W. Purinton, Wichita; J. G. Rowlett, Paola; C. D. Shrader, Salina; B. G. Smith, Arkansas City; C. R. Svoboda, Chapman; N. V. Treger, Topeka; H. A. Tretbar, Wichita.

No business was presented to the chairman. The Publicity Kit for Diabetes Week (November 11-17, 1962) arrived too late to help with any detection drives. There being no business to transact, the committee was not asked to meet.

JOHN W. SCHMAUS, M.D., *Chairman*

EMERGENCY MEDICAL CARE

H. H. Hyndman, Wichita, Chairman; F. C. Beelman, Topeka; R. W. Blackburn, Council Grove; H. D. Ellis, Wichita; J. G. Esch, Pittsburg; S. P. Hornung, Colby; K. L. Lohmeyer, Emporia; G. E. Miller, Jr., Salina; J. M. Mott, Topeka; W. A. Nixon, Wichita; M. E. Nunemaker, Hutchinson; N. H. Overholser, El Dorado; O. F. L. Prochazka, Liberal; R. H. Robinson, Wichita; D. P. Trees, Wichita; P. R. Wheeler, Wichita.

The Emergency Medical Care Committee met once this year on Sunday, December 16, 1962 in Wichita, Kansas. At that time the committee heard from Mr. Sam Glenner of the U. S. Public Health Service in regard to a Medical Self-Help Program developed by the office of Civil Defense Mobilization with the cooperation of the American Medical Association. The Medical Self-Help Program is a course designed to teach the American public how to take care of themselves and their families in the event of all-out atomic attack. First Aid is covered under this course,

as well as specific information regarding radioactive fallout, shelter, hygiene, sanitation, water, food, etc. The promotion of this program was initiated through the Governor's Advisory Council on Medical Self-Help and has resulted in a full time U. S. Public Health Service employee on loan to the Kansas State Board of Health to work on this project. The Committee at this meeting recommended this program for endorsement by the Council and endorsement was given by the Council in its January, 1963, meeting.

The committee then heard from three guests: Mr. Walter Whitlow, U. S. Public Health Service representative with the State Board of Health; Mr. Don O'Kean, also of the U. S. Public Health Service and now with the State Board of Health; and Mr. John Hove of the U. S. Public Health nearest district office in Kansas City. These three persons spoke to the committee about a program entitled "Immediate Care of the Sick and Injured," which has been successfully taught in Nebraska at the Nebraska College of Medicine for two successive years and is designed to teach advanced First Aid to those persons responsible for working with emergency cases of the sick and injured. The committee recommended this program for the consideration of the Council asking that the Council recommend that the program be taught at the Kansas University School of Medicine.

Representatives of the Medical School met with the representatives of the State Board of Health, the Kansas City district office of the U. S. Public Health Service, and the Kansas Medical Society and discussed the possibility of such a course being taught at the Kansas University School of Medicine.

Medical School representatives were in agreement that such a course was much needed and that probably it could be taught at the Medical School. At the time of this report, the course is being strongly considered as a possibility for a trial run sometime late in 1963.

In regard to the Medical Self-Help Program, the committee has just received a report that Medical Self-Help kits already distributed in a number of Kansas counties will, within the next two months, be in use in all counties in Kansas.

Plans are currently under way for a meeting of the committee with a Civil Defense representative from the American Medical Association. A supplemental report on the results of this meeting will be submitted to the House of Delegates at the annual meeting in Salina.

H. H. HYNDMAN, M.D., *Chairman*

ENDOWMENT

C. V. Black, Pratt, Chairman; J. J. Basham, Fort Scott; H. C. Blaylock, Wichita; J. A. Blount, Larned; W. T. Braun, Pittsburg; W. M. Campion, Liberal; R. R. Cave, Manhattan; P. M. Clark, Jr., Independence;

G. W. Cramer, Parsons; R. D. Dickson, Topeka; R. W. Diver, Coffeyville; W. A. Grosjean, Winfield; D. A. Kendall, Great Bend; M. D. McComas, Jr., Concordia; R. J. Maxfield, Garden City; G. C. Meek, Arkansas City; J. W. Randell, Marysville; L. J. Schaefer, Salina; J. F. Thurlow, Hays; C. D. Voorhees, Leavenworth; W. O. Wallace, Atchison; C. O. West, Kansas City; F. N. White, Russell; E. R. Williams, Dodge City.

The Endowment Committee was contacted, some members by mail and others personally. The majority decision was to have a meeting of this committee at the state meeting at Salina. The members of the Kansas Medical Society have been solicited by mail for contributions to AMA-ERF. The response to this has been very good. I have been unable to get complete figures from the national office, as they changed their bookkeeping system this year. Their cigarette girls turned in a sizeable check from the annual banquet. The check, this year, to Dr. Miller was about \$17,000.

CYRIL V. BLACK, M.D., *Chairman*

FEE SCHEDULE

J. G. Claypool, Howard, Chairman, Internal Medicine; H. J. Brown, Winfield, Anesthesiology; E. P. Carreau, Wichita, Surgery; R. F. Conard, Emporia, Radiology; G. W. Fields, Scott City, General Practice; W. H. Fritzscheier, Wichita, Dermatology; L. W. Hatton, Salina, Psychiatry; J. E. Hill, Arkansas City, Ophthalmology; T. C. Hurst, Wichita, Pediatrics; G. B. Joyce, Topeka, Orthopedics; J. G. Kendrick, Wichita, Obstetrics and Gynecology; W. R. Lentz, Topeka, General Practice; W. P. McKnight, Wichita, ENT; P. W. Morgan, Emporia, Internal Medicine; C. R. Openshaw, Hutchinson, Thoracic Surgery; J. G. Phipps, Wichita, General Practice; W. J. Reals, Wichita, Pathology; J. E. Roderick, Salina, Urology; N. V. Treger, Topeka, Internal Medicine; S. L. Vander Velde, Emporia, Surgery.

In the preparation of a fee schedule for the Blue Shield Senior Citizens contract, your committee recommended that the Kansas Relative Value Studies should be the vehicle upon which the schedule would be constructed and that fees should approximate 10 per cent of Plan A.

It became apparent that not fewer than three conversion factors, ranging from \$2.35 for surgery to \$3.90 a point for in-hospital medical care, would be required to accomplish this objective. The Council asked your committee to explain why this was necessary.

Your committee is of the opinion that the relationships in the Relative Value Scale can be made to operate across the different areas of medicine through the utilization of one conversion factor. Varying factors should be employed only where fee schedules of low payment are contemplated and then only

for the purpose of requiring one system to take a greater payment reduction than another.

To accomplish this, each system establishes the point relationships of all procedures under that system. Integration between systems involves only raising or lowering all points of a system according to a percentage factor as may be required to create equality. For example, if normal charges for surgical procedures appear to be achieved at a conversion factor of \$5, but \$10 is needed to accomplish this for radiology, since the relationships in each system have already been established, all points in this illustration needed to be doubled for surgery or reduced by half for radiology and then one conversion factor can be used.

This is precisely how the Kansas Relative Value Study was prepared and yet it cannot be integrated into a Blue Shield Schedule. It appears at this time that one of several things has occurred. It must be that Blue Shield Schedules do not reflect a relationship to going charges (that some services are paid a higher percent of actual charges than are others), that physicians did not accurately report their normal charges when the Society survey was conducted several years ago, or that the data was misinterpreted by your committee. Perhaps some of the problem is occasioned by each of these possibilities.

Your Fee Committee proposes to review the Society survey, again in detail and with care. The House of Delegates will recall approximately 800 members listed their normal charges for those services they frequently performed among the 500 samples used in the survey. Individual charges ranged widely for most procedures, but generally the median and the mean average were almost identical. Kansas Blue Cross-Blue Shield performed the large task of tabulating this data and it is available for another review to determine whether portions of this study might previously have been misinterpreted.

This survey will be challenged by a tabulation of "normal charges" participating physicians record on their Blue Shield reports. Your committee is advised that 95 per cent of all claims made to Blue Shield include this statement. Such information is never individually applied for any purpose but will serve as a statistical balance against figures submitted through the survey.

The above sources should provide a reliable figure of an average charge for a service to a person of average economic status. Upon this base a review will be made of the fee schedule for Blue Shield Plan A and the results will discover variations from the normal, if there prove to be any, for individual procedures and for systems of procedures. This will reveal, for instance, that on an average, Plan A pays a certain percent of usual charges. Where a procedure varies from this percentage this will become apparent.

It will also demonstrate whether a system of services differs from others in the percent of payment in relation to usual charges.

After the above has been accomplished your committee proposes to place those findings against the point system established by the Relative Value Studies and will recommend to a future House of Delegates whatever changes in point values may be required to create a more nearly equitable relationship in payments when the Relative Value Study is used as a basis for a fee schedule utilizing a single conversion factor.

The above analysis for the sake of brevity has ignored certain obstacles which will probably never find a perfect solution. Among these are such things as geographical and specialty vs. general practice, variations of actual charges, and many others. These point to the basic fact that a relative value scale can never become perfect, will never reflect the relationship of all procedures as viewed by any single physician, but when viewed as a fluid instrument, designed to present averages, and when used as a guide it can be useful.

For those reasons your committee respectfully submits two resolutions for consideration by this House of Delegates.

RESOLUTION No. 1

WHEREAS, the Committee on Fee Schedules has been asked to determine why more than one conversion factor becomes necessary when the Relative Value Scale is used as a basis for the construction of a fee schedule such as the Senior Citizens contract currently offered by Blue Shield, and

WHEREAS, the Fee Committee believes three conversion factors for a fee schedule for the Senior Citizens contract is the most equitable present use to which the Relative Value Scale can now be employed, therefore be it

Resolved, that for the time being the Senior Citizens program utilize the Kansas Relative Value Studies as a basis for its fee schedule, and that surgical payments be based on the Relative Value Study at \$2.35 a point; that anesthesia be paid at a ratio of \$2.35 per point; that in-hospital medical care be paid at the rate of \$3.90 per point; and that radiology be paid on the basis of \$3.00 per point.

RESOLUTION No. 2

WHEREAS, it should be understood by each physician of this state that a Relative Value Study is a fluid document to be amended as necessary, and

WHEREAS, it should be understood that a Relative Value Study is not a fee schedule, but a convenient vehicle upon which a fee schedule can be constructed, and

WHEREAS, the committee believes there should be a way to resolve the existing necessity of utilizing more than one conversion factor for a single fee schedule, therefore be it

Resolved, that the Committee on Fee Schedules be authorized to study this problem further as follows:

1. To make an analysis of the stated normal charges listed by physicians on their Blue Shield reports as a means for arriving at an average charged fee for a service as stated by the physicians of this state, and

2. To correlate the above average figure with the averages as obtained from the survey of charges made by the Kansas Medical Society several years ago, and

3. With the above information, this committee may then recommend changes of some point values, if necessary, in the Relative Value Scale which will make possible the future use of this document as a vehicle upon which a fee schedule may be constructed through the use of a single conversion factor.

J. G. CLAYPOOL, M.D., *Chairman*

GENERAL PRACTICE AWARD

A. K. Ratzlaff, Goessel, Chairman; H. D. Ellis, Wichita; C. F. Henderson, Parsons; J. W. Jacks, Pratt; B. P. Meeker, Wichita; N. H. Overholser, El Dorado; J. L. Perkins, Hutchinson; W. G. Rinehart, Pittsburg; C. O. Tompkins, Newton; S. Zweifel, Kingman.

A survey is now being conducted among the members of this committee to determine whether or not the committee will recommend a Kansas General Practitioner for the General Practitioner of the Year award. A supplemental report will be made to the House of Delegates as to whether or not the committee plans to submit a Kansas general practitioner's name for this award.

A. K. RATZLAFF, M.D., *Chairman*

GERONTOLOGY

D. V. Preheim, Newton, Chairman; W. R. Beine, Coffeyville; L. J. Beyer, Lyons; A. W. Butcher, Abilene; T. Dechairo, Westmoreland; G. M. Edmonds, Horton; R. W. Fernie, Hutchinson; H. A. Flanders, Hays; J. T. Hamilton, Wichita; A. M. Isaac, Wichita; G. Mandeville, Spearville; J. J. Marchbanks, Oakley; R. McCoy, Coldwater; G. E. Milbank, Wichita; R. F. Morton, Arkansas City; A. R. Mueller, Leavenworth; T. V. Oltman, Riley; J. W. Parker, Jr., Burlington; L. W. Purinton, Wichita; R. G. Rate, Halstead; H. D. Riordan, Wichita; D. L. Rose, Kansas City; A. F. Rossitto, Wichita; H. L. Songer, Lincoln; C. E. Stevenson, Neodesha; P. W. Thompson, Topeka.

This committee has had an interesting and it is hoped a rewarding year. We are pleased to submit to the House of Delegates a report on several projects.

The committee accepted responsibility and requested of the Editorial Board permission to supply the scientific material for one issue of the JOURNAL OF THE KANSAS MEDICAL SOCIETY. This was accomplished as evidenced by the appearance of the February issue of the JOURNAL OF THE KANSAS MEDICAL SOCIETY. The chairman wishes to express his grati-

tude to the contributors for this issue and to the Editorial Board for permitting the committee the use of this publication in an attempt to extend by some small measure the general interest in the practice of medicine in the area of geriatrics.

A major effort of the committee during the previous year was performed in cooperation with the State Board of Health in the establishment of rules and regulations for the licensing of nursing homes. The result of this work has been distributed to members of the medical profession. The vast amount of work necessary for such a document was performed by Norman V. Anderson, M.D. of the Department of Public Health. This committee met with him on several occasions and explored in detail the various rules and regulations involved. Some suggested changes were offered which were agreed upon and are now in effect. It is believed the program for licensing nursing homes will make this type of facility of increased benefit to the physicians of this state and to the patients they are caring for.

Your committee wishes to call to the attention of the profession that three types of nursing homes will be licensed in differing degrees according to the type of patient they will serve. Of most immediate interest to the medical profession is the skilled nursing home which is designed to care for patients who are medically entered into nursing homes and who for reasons of health require considerable nursing and rehabilitative care. Your committee wishes to recommend that the House of Delegates endorse future activities whereby this committee might work closely with the Nursing Homes Association of Kansas toward improving standards of nursing homes whereby they can provide a better service for the physicians and their patients. Toward this end some members of your committee, including your chairman, are currently engaged in attempting to assist the Nursing Homes Association in establishing a system of accreditation which will involve an additional set of standards relating to the quality of a variety of professional services in the paramedical field offered in the nursing homes of the skilled category.

Your committee would be grateful to the House of Delegates for any other assignments or suggestions for future activities that may be offered.

D. V. PREHEIM, M.D., *Chairman*

HISTORY

R. R. Melton, Marion, Chairman; J. W. Butin, Wichita; M. A. Carter, Wichita; H. C. Clark, Wichita; A. W. Corbett, Emporia; I. A. Koeneke, Halstead; W. K. Nickell, Topeka; H. P. Palmer, Scott City; J. G. Rowlett, Paola; R. Schrepfer, Kansas City; R. A. Schwegler, Lawrence; C. D. Shrader, Salina; G. S. Voorhees, Leavenworth.

The House of Delegates last year passed a resolu-

tion establishing an award similar to the Don Carlos Guffey Award to be known as the Kansas Medical Society Prizes in History of Medicine. This award which would be offered for the three best papers written about a Kansas physician or a member of the University of Kansas School of Medicine faculty, has as first prize an award of \$100; second prize \$50; and the third prize—two volumes of Major's "History of Medicine."

The Committee on History has not met this year; however, if there are any history papers submitted to the History Committee for judging, a report will be made to that effect at the House of Delegates meeting.

R. R. MELTON, M.D., *Chairman*

HOSPITALS

R. H. Hill, Meade, Chairman; L. G. Allen, Jr., Kansas City; G. B. Athey, Columbus; W. P. Callahan, Jr., Wichita; M. D. Christensen, Kiowa; J. D. Colt, Manhattan; E. R. Cram, St. Francis; M. C. Eddy, Hays; F. R. Frink, Lawrence; E. R. Gelvin, Concordia; J. D. Gough, Chanute; W. E. Grove, Newton; G. F. Gsell, Wichita; A. L. Hilbig, Liberal; R. R. Lee, Wichita; J. Magalif, Mission; D. B. Parker, Ness City; J. E. Randle, Bucklin; C. D. Snyder, Winfield; E. B. Struxness, Hutchinson; R. J. Taylor, Wichita; R. E. White, Garnett.

During the past year this committee resolved a project which occupied the attention of Committee on Hospitals during the past five years through the creation of The Kansas Council on Standards for Hospitals. A number of meetings were held during the year with representatives of the Kansas Hospital Association. An extensive questionnaire was prepared listing the qualifications for small hospitals which were approved first by the committee and secondly through the Council of the Kansas Medical Society and the governing board of the Kansas Hospital Association. The forms were then prepared and mailed to the small hospitals in the state. The committee is now awaiting the formal application of these hospitals for a certificate of approval by the council.

The first effort of the council was the adoption of a resolution that, while the council would make its services available to any hospital requesting assistance, approval for recognition by this council for any hospital would be limited to those who could not qualify by reason of size for accreditation by the Joint Commission on Accreditation of Hospitals.

For the possible interest of the House of Delegates, the first Joint Voluntary Commission for Standards of Small Hospitals of Kansas consists of the following members: H. St. Clair O'Donnell, M.D., Ellsworth, Chairman; Richard H. Hill, M.D., Meade; L. W. Patzkowsky, M.D., Kiowa; E. B. Struxness, M.D., Hutchinson; Curtis C. Erickson, Phillips County Hospital, Phillipsburg; Austin J. Evans, Hadley

Memorial Hospital, Hays; Marvin H. Ewert, Bethel Deaconess Hospital, Newton; Louis C. Reid, Epworth Hospital, Liberal.

RICHARD H. HILL, M.D., *Chairman*

INDUSTRIAL MEDICINE

J. F. Lance, Jr., Wichita, Chairman; W. L. Anderson, Atchison; J. A. Budetti, Wichita; G. L. Campbell, Arkansas City; A. S. J. Clarke, Prairie Village; R. A. Crawford, Hutchinson; C. L. Francisco, Kansas City; W. L. Good, Mission; O. L. Hanson, Topeka; W. A. Harms, Hesston; C. A. Isaac, Newton; E. E. Johnson, Jr., Norton; C. M. Lessenden, Jr., Topeka; F. L. Loveland, Topeka; W. A. McClanahan, Wichita; G. E. Miller, Jr., Salina; P. C. Nohe, Kansas City; L. M. Pearce, Shawnee Mission; W. F. Powers, Wichita; R. K. Purves, Wichita; H. L. Regier, Kansas City; L. M. Rhodes, Wichita; E. C. Sifers, Kansas City; J. L. Salomon, Wichita; R. W. Urie, Parsons; C. L. White, Great Bend.

This year has been a busy year for the Industrial Medicine Committee. While this is a rather large committee, the turn-outs for our meetings have been exceptionally good.

At a meeting on May 27, 1962 of the entire committee, it was moved and adopted that fees for work done under Workmen's Compensation schedule should be commensurate with fees normally charged by the Kansas physicians in private practice and that the most recent Kansas Relative Value Schedule be recommended for use in the Workmen's Compensation Manual with a factor of \$5 per point to be used in determining maximum fees in Workmen's Compensation cases.

Mr. Fred Rausch, Director for Workmen's Compensation in Kansas, agreed to meet with the subcommittee of our committee on June 7, 1962 in his office in Topeka. Mr. Imboden and I both had several conversations with Mr. Rausch following this meeting and it was our impression as of November that Mr. Rausch would accept the Relative Value Schedule for the new compensation manual with the conversion factor of \$4 per point. We learned on November 8, 1962 that the Director had approved a value of \$4.50 for each point assigned to the various medical services described in the Relative Value Study to be a fair and reasonable charge for said medical or hospital expenses rendered by Doctors of Medicine. We were very pleased with this decision on the Director's part and feel that the adoption of the Relative Value Schedule is a tremendous stride for the Kansas Medical Society in the Workmen's Compensation field.

The committee also recommended to the Director, alterations of several sections of the Workmen's Compensation rules which may be made at the discretion of the Director. These recommendations occupy sev-

eral pages and as yet the committee has not learned whether or not its recommendations have been acted upon.

Immediately after the adoption of the new medical fee schedule, Mr. Rausch came in for some criticism from industry, insurance companies and others. At the request of an organization called Associated Industries, Inc., Mr. Rausch held an open hearing at the State Office Building on Monday, March 11, 1963. Approximately 50 persons attended this hearing. The Committee on Industrial Medicine was represented by myself as chairman and Drs. R. K. Purves, E. C. Sifers, C. L. White and Mr. Imboden.

We knew not what to expect of this hearing but found it to be an enlightening and not unpleasant experience. The hearing was extremely well handled and it was your sub-committee's feeling that the questions put to us were reasonable and sincere in intent.

Since there have been no announcements as to the results of the hearing, the committee will submit a supplemental report to the House of Delegates when the findings of the hearing are reported by the Director.

J. F. LANCE, JR., M.D., *Chairman*

LEGISLATION

H. St. Clair O'Donnell, Ellsworth, Chairman; (Executive Committee plus A.M.A. Delegates).

At the time of this writing, the Kansas legislature is still in progress and many of the fifty or more items of legislation of interest to the medical profession are still unresolved. It is, therefore, not possible to make a report of any consequence until the legislative session has been concluded.

Your chairman hopes at the time of the House of Delegates meeting to be able to make a supplementary report concerning activities of the legislature in the area of health.

Your Committee on Legislation has been informed throughout the legislative session concerning the problems as they arose. There have been several meetings and numerous telephone conferences. Members of this committee have on numerous occasions appeared before the various committees of the Kansas Senate or House of Representatives concerning specific items.

H. ST. CLAIR O'DONNELL, M.D., *Chairman*

MATERNAL WELFARE

L. E. Woodard, Chairman, Wichita; A. H. Baum, Dodge City; D. L. Berger, Mission; E. C. Brandsted, McPherson; R. M. Carr, Junction City; J. F. Cornely, Osborne; S. T. Coughlin, Larned; G. W. Fields, Scott City; H. M. Floersch, Kansas City; E. S. Gendel,

Topeka; D. E. Gray, Topeka; R. G. Heasty, Manhattan; D. S. Klassen, Newton; Kermit Krantz, Kansas City; C. D. Voorhees, Leavenworth; W. T. West, Wichita; H. R. Wilcox, Lawrence; J. G. Lee, Kansas City; E. A. Martin, Parsons; O. L. Martin, Salina; C. P. McCoy, Wichita; M. L. Molloyhan, Seneca; N. H. Overholser, El Dorado; R. Pfuetze, Topeka; E. S. Rich, Newton; W. R. Roy, Topeka; C. D. Schrader, Salina; J. C. Schroll, Hutchinson; R. Sohlberg, Jr., McPherson; E. F. Steichen, Lenora; R. Swisher, Wichita; Dan Tappan, Topeka; D. L. Traylor, Emporia.

The prevention of maternal deaths and the study of the causes and prevention of such deaths, have been the continuing objective of the Maternal Welfare Committee. To this end, during the past year, the committee met on three occasions and scheduled a fourth meeting to take place a month prior to the state convention. An index of the interest and enthusiasm of the committee is expressed in the attendance record which has remained between 23 and 26 members for each session.

Twenty-seven summaries of maternal deaths have been prepared by the committee during the current year. Seven remained to be reviewed in the last meeting.

For the past three years, the committee has been revising a manual for obstetric practice prepared by the Maternal Welfare Committee, the Medical Society and the Maternal and Child Health Division of the State Board of Health of Minnesota. The experience and knowledge of practitioners in Kansas is being incorporated into the manual and it is far enough along at this point, that the committee anticipates its publication within the next few months. The manual offers guide-lines for obstetric consultation, pressing needs for obstetric hospital management, and recommendations for maintaining a high standard of maternal care.

Death rates per year and rates per 10,000 live births for Kansas and the United States are shown below. (The separate column represents deaths re-

corded by the Maternal Welfare Committee* and differs from the Vital Statistics figures because of the international coding system. The underlying cause of death takes predominance over any contributory cause in the international coding. A maternal death in which the underlying cause was a systemic disease process, would be recorded in accordance with this major cause. A pregnant patient with severe bronchiectasis who dies due to pneumonia during or following delivery, would be coded as a bronchiectasis, with pneumonia, with pregnancy as a contributory cause.)

It must be emphasized that the total maternal deaths for 1962 have not been finally tabulated, as it often takes several months for a death certificate to be recorded from the previous year. Through January in 1963, two maternal deaths have been recorded. Although the rise in maternal deaths is not great over the previous year, the trend is not as hopeful as it was in the late 50's and in 1960.

The committee heard State Board of Health recommendations for alteration in the present Kansas statutes pertaining to abortion and to contraception.

A resolution from the Executive Committee of the Wyandotte County Medical Society was presented to the Maternal Welfare Committee concerning sterilization laws in Kansas. It was recommended that the committee study the new Virginia voluntary sterilization law proposed to the Virginia Legislature by the Virginia Medical Association. The chairman appointed a sub-committee to review the problem.

A review of deaths in which puerperal infection was a contributing factor, was prepared for the committee and further articles and discussions will appear in the JOURNAL at a later date.

The committee members have met with continued excellent cooperation from physicians interviewed about maternal death cases. Condensed versions of the committee's findings on these cases have been published regularly in the JOURNAL OF THE KANSAS MEDICAL SOCIETY.

L. E. WOODARD, M.D., *Chairman*

Maternal Deaths

YEAR	KANSAS DEATHS	COMMITTEE DEATHS*	U. S. DEATHS
1950 ...	27	37	2,960
1960	9	12	1,360
1961	13	18	1,380
1962	12	20	
	(tentative)	(tentative)	(not available)

Rate per 10,000 Live Births

YEAR	KANSAS RATE	U. S. RATE
1950	6.1	8.3
1960	1.8	3.2
1961	2.6	3.2
1962	2.5	(not available)
	(tentative)	

MEDICAL ASSISTANTS

R. H. Moore, Lansing, Chairman; H. P. Jones, Lawrence; G. H. Keene, Wichita; S. C. McCrae, Salina; G. H. Nelson, Jr., Garden City; G. B. Pees, Iola; R. C. Polson, Great Bend; F. L. Smith, Jr., Colby.

This has been a busy and productive year for the Medical Assistants Committee. Three invitations for meetings were extended by the medical assistants to the committee, once to meet with the Executive Committee and twice with the Medical Assistants Committee on Education.

Considerable planning and effort was put forth last year to make the late summer, early fall Medical As-

sistants Circuit Courses a success. As in the past, the Kansas Medical Society sponsored these courses held in Dodge City, July 21 and 22; Lawrence, August 18 and 19; and Wichita, September 8 and 9. Subjects covered at these courses were: "Medical Terminology," Dr. Thomas P. Butcher; "How Can the Medical Assistant Aid the Laboratory," Drs. Leo P. Cawley, Russell J. Eilers and Bert E. Stofer; and "How to Reduce Your Paper Work by Properly Filling Out Health Insurance Claim Forms," representatives from several insurance companies and the Kansas Workmen's Compensation office spoke and served on a panel moderated by Mr. Will J. Miller, president of the Kansas Health Insurance Council. "Problem Patients and the Medical Assistant," Dr. James Stachowiak; "Communication, Myth? Master? or Myrmidon?," Dr. Frank E. X. Dance. Dr. Dance also led an evaluation session to determine how the course was received, whether there should be future courses, and if so, what subjects should be covered.

Committee members living in the general areas where these courses were held were invited to attend as guests of the Medical Assistants.

The President, Norton L. Francis, M.D., spoke at each of the courses on legislation to come before the 1963 Legislature, affecting the physician and the medical profession.

Two circuit courses were held in three communities during 1962. The first of these courses was reported in our committee report last year. This year there will be only one circuit course, which will be held in four locations, Dodge City, Hays, Lawrence and Wichita. Another program is in the planning stage at this time and we hope to be able to make a complete report at the meeting of the House of Delegates in Salina.

R. H. MOORE, M.D., *Chairman*

MEDICAL ECONOMICS

L. W. Reynolds, Hays, Chairman; E. G. Anderson, Wichita; J. N. Blank, Hutchinson; F. A. Garlock, Great Bend; K. L. Graham, Leavenworth; H. T. Gray, Wichita; J. K. Griffith, Neodesha; G. E. Kassebaum, El Dorado; J. A. McClure, Topeka; R. F. Moore, Caney; L. S. Nelson, Jr., Salina; C. A. Nystrom, Cawker City; E. B. Scagnelli, Dodge City; J. G. Shellito, Wichita; R. C. Stanley, Paola; B. E. Stofer, Wichita.

The Committee on Medical Economics has had a large number of projects under study this year. The passage of the Keogh bill at the last session of Congress opened a new approach to retirement programs but leaves considerable to be desired as far as the average M.D. is concerned. The Kerr-Mills Bill is being considered in the legislature at the present time. A Professional Incorporation Bill is now also

before the legislature. The insurance programs endorsed by your Society also need constant study, revision and improvement.

The committee has had one meeting thus far on November 11, 1962. The Keogh Bill was discussed thoroughly and a subcommittee headed by Dr. James McClure was appointed to work out how the average physician can use it to the best advantage. We could advise that no commitments to any plan be made before the regulations of the Internal Revenue Service are issued or before the report that the AMA will issue at its meeting in June.

Several new proposals for insurance were received by representatives of insurance companies.

This meeting was necessarily an explanatory one and our recommendations will be made at a meeting March 24, 1963. Since this date is after the publication date of the annual meeting issue of the JOURNAL, we will make a supplementary report to the House of Delegates in Salina.

L. W. REYNOLDS, M.D., *Chairman*

MEDICAL SCHOOLS

E. W. Crow, Wichita, Chairman; A. E. Bair, Independence; R. G. Ball, Manhattan; W. C. Bartlett, Wichita; M. L. Belot, Jr., Lawrence; M. E. Dunn, Kansas City; D. L. Evans, Manhattan; D. B. Foster, Topeka; L. F. Glaser, Hutchinson; W. C. Goodpasture, Wichita; H. P. Jones, Lawrence; L. E. Leigh, Overland Park; D. Lukens, Hutchinson; D. L. Marchbanks, Salina; R. J. Metcalf, El Dorado; J. C. Mitchell, Salina; J. L. Morgan, Emporia; H. P. Palmer, Scott City; D. R. Pierce, Topeka; J. W. Schmaus, Wichita; J. D. Walker, Pittsburg; I. J. Waxse, Oswego; R. W. Weber, Salina.

Your committee had a most stimulating meeting with the dean and department heads of the University of Kansas School of Medicine. A summary of this meeting might be of interest.

Perhaps the greatest single new event is the consolidation of the campus whereby all four classes are now at Kansas City. A new building for the teaching of basic sciences is under construction.

As this report is written, the Kansas legislature is still in session. It appears, however, that legislative appropriations for operating expenses will be approved as requested. This figure is nearly six million dollars and less than 40 per cent of the total operating cost. The remainder is obtained through fees, grants and contributions.

The legislature is at this time also considering an appropriation for half the cost of constructing a new \$1,300,000 laboratory building which will be matched by federal money for completion. Other proposed expansion was outlined, such as a security ward for prisoners. The most urgent need in long range planning is the purchase of additional land

because all of the present property is now utilized. The hope was expressed that this might be achieved through contributions.

A statistical analysis concerning students revealed several somewhat surprising facts.

1. There are nearly 1,000 students on the campus at the medical school. Less than half are medical students. The others study nursing, physical therapy, practical nursing, dietetics, etc.

2. Although many medical schools report a decline in the number and in the quality of applicants for medical education neither situation is true for Kansas. In 1958 there were 305 applicants. In 1959, 284; 1960, 332; 1961, 316; 1962, 334; and 1963, 425. Quality as measured by apparent aptitudes for medicine and by a measure of grade averages is higher today than five years ago.

3. Preliminary findings concerning an experiment in pre-medical education were interesting. Pre-medical students at Kansas State University major in scientific subjects. Pre-medical students at the University of Kansas major in any area of their selection, i.e.: the humanities, languages, literature, etc. Experience of both groups in the School of Medicine is almost identical.

4. The estimated cost of four years' study at the University of Kansas School of Medicine for an individual student is between ten and twelve thousand dollars.

An analysis of the curriculum gave your committee a new insight into this subject. During the first year the basic sciences are taught and emphasis is placed upon the clinical value of this knowledge. The vastly expanded content of these subjects creates a problem of extending teaching time or increasing teaching efficiency. Through the use of television as an aid in teaching anatomy, by way of example, learning is accelerated.

The second year is devoted to the study of abnormal human biology. Clinical work during the third year is introduced by acquainting the student with the operation of special diagnostic instruments and techniques.

The fourth year is divided into six eight-week periods of which four are required in psychiatry, medicine, surgery and obstetrics-gynecology. One period consists of a four-week preceptorship and a four-week elective. The final eight-week period is elective. This enables the student to select for twelve weeks, if he wishes, an area of study in a particular medical field.

Nurse education and a wide range of related subjects received considerable attention. Although the committee did not achieve a uniform opinion, a discussion of medical care in the future was spirited. Perhaps as the ratio of physicians to population decreases and as rehabilitation, industrial medicine and

other areas of service may require increasing attention physicians should plan toward improving the efficiency of their efforts. One means in which this might be accomplished is through the expanded utilization of trained personnel in paramedical fields. A clinic might, by way of illustrating this subject, employ nurses especially trained to make house calls. They might perform certain postoperative services enabling the patient to be released from the hospital earlier, etc.

This general topic brought out two resolutions your committee submits to the House of Delegates for consideration.

RESOLUTION No. 1

WHEREAS, nursing care can increase the efficiency of a physician's effort, therefore be it

Resolved, that the Kansas Medical Society appoint a special committee to work closely with the nursing profession, that it work with the University of Kansas School of Medicine to provide ample and high quality educational facilities for nurse education in Kansas, and that it explore the broad range of work opportunities for nurses, especially in the area of patient service.

RESOLUTION No. 2

WHEREAS, there has been noted an increased public criticism of the cost of health services, especially in prepaid health insurance and hospitalization, and

WHEREAS, until now there appears to be no where in Kansas the facility for sound research on this subject as it relates to the provider of these services, and

WHEREAS, the University of Kansas through the reorganization of its department of environmental medicine might make great contributions toward knowledge in this area, therefore be it

Resolved, that the University of Kansas School of Medicine be encouraged to set up an office to study the problems of usage, insurance and related topics, and be it further

Resolved, that the Kansas Medical Society through existing committees or by any other means give full cooperation and assistance to this project.

Considerable discussion concerned the Kansas Medical Alumni Association and its magnificent support of the school. This also prompted a resolution.

RESOLUTION No. 3

WHEREAS, the Kansas Medical Alumni Association has been an essential and deeply appreciated aid to the School of Medicine, and

WHEREAS, the support of work of this association will reflect benefit to physicians and to the public, and

WHEREAS, the Kansas Medical Alumni Association is now pledged to raise a fund of one million dollars, therefore, be it

Resolved, that the Kansas Medical Society give its complete support to this association and to the fund raising project and that the Society urge each individual physician to participate in the program through personal contribution and efforts.

Your committee wishes to express its appreciation to Dr. C. Arden Miller, his faculty and his staff for the complete cooperation given to all members at this meeting, and for the services they are rendering the medical profession and the people of this state. It is the opinion of this committee that relationships between the School of Medicine and the medical profession remain excellent.

E. W. CROW, M.D., *Chairman*

MEDICARE

Salina Area: L. S. Nelson, Sr., Salina, Chairman; D. A. Anderson, Salina; R. L. Dreher, Salina; N. M. Jenkins, Salina; J. A. Lathrop, Concordia; G. S. Ripley, Jr., Salina.

The Medicare system was designed as a fringe benefit for service men and their families and has been supported by the doctors of the State of Kansas. This area committee has met whenever there was need and has functioned as best it could without recompense. Sometimes it had to make decisions relative to reducing fees of fellow practitioners, not because charges were excessive for services rendered, but because extenuating circumstances are not fully covered in the fee schedule.

Your committee in this area believes that no physician abused the privilege by over-charging, or falsifying reports. We are grateful to all physicians who have rendered services to these people and for having furnished us with adequate records.

Mr. Ebel, our executive secretary, deserves much credit for his untiring efforts in our behalf and his exceptional memory of detail in the complexities of adjustment.

L. S. NELSON, SR., M.D., *Chairman*

Wichita Area: B. P. Meeker, Wichita, Chairman; E. G. Anderson, Wichita; C. P. McCoy, Wichita; J. G. Shellito, Wichita; C. K. Wier, Wichita.

The committee has met two or three times and acted upon all the cases presented. There was a good turnout of the committee at each meeting.

We had excellent help from Oliver Ebel and Blue Cross-Blue Shield.

The last meeting was in January, so I think we are in good condition.

BRUCE P. MEEKER, M.D., *Chairman*

MENTAL HEALTH

J. A. Grimshaw, Topeka, Chairman; A. J. Adams, Wichita; H. V. Bair, Parsons; R. E. Banks, Paola; A. P. Bay, Topeka; I. C. Case, Topeka; O. R. Cram, Jr., Larned; W. J. Gardner, Halstead; J. H. Gilbert, Seneca; M. T. D. Glassen, Phillipsburg; D. C. Greaves, Kansas City; F. H. Harris, Wichita; L. W. Hatton, Salina; F. C. Newsom, Wichita; J. Magalif, Mission;

V. Page, Plainville; W. F. Roth, Jr., Kansas City; H. L. Schloesser, Topeka; F. V. Smith, Larned; W. C. Schwartz, Manhattan; H. G. Whittington, Lawrence; D. G. Zubowicz, Osawatomie.

Members of the Committee on Mental Health have had an extremely active year even though no formal meetings of the committee were held. A meeting has been scheduled for April 6, 1963, at which time the committee will meet with other persons interested in the field of mental health to discuss a Kansas Mental Health Congress to be held in conjunction with the Kansas Academy of General Practice and the Kansas Association for Mental Health in Topeka on October 24, 25, and 26, 1963.

Members of the committee have attended meetings in regard to the planning of a mental health congress in Kansas. This program is an outgrowth of two American Medical Association meetings held in Chicago, which were attended by many on the committee.

At our committee meeting in April complete details will be worked out whereby the committee will cooperate with the program committees of the Kansas Academy of General Practice and the Kansas Association for Mental Health in planning the congress.

The committee has been requested to work with the Department of Institutional Management on a ten-year mental health program in Kansas. It is expected that the committee will recommend that the Kansas Medical Society cooperate in this most worthy project. A resolution to this effect will be presented to the House of Delegates at the time of the annual meeting in Salina.

J. A. GRIMSHAW, M.D., *Chairman*

NECROLOGY

O. R. Clark, Topeka, Chairman; D. E. Gray, Topeka; R. Greer, Topeka; D. Lawson, Topeka; J. A. Segerson, Topeka.

The Committee on Necrology submits the following list of members of the Kansas Medical Society whose deaths have been reported since the last meeting of the House of Delegates.

<i>Name and Address</i>	<i>Age</i>	<i>1962</i>
William G. Norman, <i>Cherryvale</i>	89	April 13
R. Herbert Rollow, <i>Chanute</i>	63	Mar. 10
Francis M. Coffman, <i>Memphis, Tenn.</i>	84	May 4
Wilbur G. Gillett, <i>Wichita</i>	70	May 8
Clarence K. Vaughn, <i>Carmel, Calif.</i>	86	April 16
Marmaduke D. McComas, Sr., <i>Courtland</i>	77	April 22
Albert A. Gausz, <i>Leavenworth</i>	58	May 25
Barrett A. Nelson, <i>Manhattan</i>	67	June 10
Harold F. Spencer, <i>Emporia</i>	54	May 27
Charles E. Vestle, <i>Humboldt</i>	57	June 11
James E. Bresette, <i>Kansas City</i>	40	July 2
Theodore S. Gage, <i>Overland Park</i>	57	June 26

Marion F. Russell, Jr., <i>Great Bend</i>	38	June 24
Louis K. Zimmer, <i>Lawrence</i>	61	June 24
Balthaser A. Brungardt, <i>Salina</i>	74	July 7
Francis S. Carey, <i>Kansas City</i>	70	July 14
William J. Feehan, <i>Kansas City</i>	60	July 19
Cecil E. Hassig, <i>Kansas City</i>	65	Sept. 2
Bruce A. Higgins, <i>Sylvan Grove</i>	84	Aug. 8
Martin L. Brakebill, <i>Sharon Springs</i>	82	Sept. 13
Wilfred Cox, <i>Wichita</i>	67	Oct. 3
Carl M. Epstein, <i>Topeka</i>	50	Oct. 13
Thomas J. Brown, <i>Hoisington</i>	79	Oct. 26
Lawrence L. Cooper, <i>Fort Scott</i>	58	Oct. 29
Robert C. McClymonds, <i>Walton</i>	83	Oct. 17
Howard G. Markham, <i>Parsons</i>	84	Dec. 26
George W. Morgan, <i>Savonburg</i>	94	Dec. 18
William A. Parrish, <i>Pittsburg</i>	74	Dec. 2

1963

Guilford G. Greenlee, <i>Chapman</i>	83	Jan. 8
Leeman C. Joslin, <i>Harper</i>	66	Mar. 7
Fowler B. Poling, <i>Wichita</i>	48	Feb. 17

ORVILLE R. CLARK, M.D., *Chairman*

NOMINATING COMMITTEE

A meeting of the Nominating Committee was held at the Jayhawk Hotel, Topeka on Sunday, February 17, 1963, beginning at 12:00 Noon. Present were Dr. M. C. Eddy, Chairman, and Drs. C. M. Barnes, O. W. Davidson, C. W. Miller and H. N. Tihen. Also available to the Committee for answer to specific questions was Mr. Oliver E. Ebel.

The Committee submits the following list of possible candidates for the consideration of the House of Delegates:

President-Elect

J. C. Mitchell, M.D., Salina. Born in 1913. Graduated from Kansas University School of Medicine in 1938. Has held various offices and has served as councilor.

First Vice President

G. E. Burket, Jr., M.D., Kingman. Born in 1912. Graduated from Kansas University School of Medicine in 1937. Has held various offices and was chairman of Society committees.

Second Vice President

G. F. Gsell, M.D., Wichita. Born in 1907. Graduated from Rush Medical College in 1933. Has served as councilor and AMA Delegate.

J. A. McClure, M.D., Topeka. Born in 1918. Graduated from Kansas University School of Medi-

cine in 1944. Has served as councilor and chairman of Society committees.

J. L. Morgan, M.D., Emporia. Born in 1915. Graduated from University of Pennsylvania School of Medicine in 1940. Has been councilor and chairman of committees.

Secretary

Leland Speer, M.D., Kansas City, Kansas. Born in 1912. Graduated from Kansas University School of Medicine in 1936. Is currently serving as Secretary.

Treasurer

J. L. Lattimore, M.D., Topeka. Born in 1894. Graduated from Fort Worth School of Medicine in 1918. Is currently serving as Treasurer.

AMA Delegate

C. W. Miller, M.D., Wichita. Born in 1909. Graduated from University of Louisville School of Medicine in 1936. Is past president of the Society.

Alternate AMA Delegate

W. J. Reals, M.D., Wichita. Born in 1920. Graduated from Creighton University School of Medicine in 1945. Is currently serving as Alternate AMA Delegate.

M. C. EDDY, M.D., *Chairman*

PATHOLOGY

J. E. Johnson, Kansas City, Chairman; W. P. Callahan, Jr., Wichita; R. J. Eilers, Kansas City; A. A. Fink, Topeka; C. A. Hellwig, Halstead; H. Lettner, Hutchinson; R. J. Rettenmaier, Kansas City; R. J. Taylor, Wichita; C. J. Weber, Salina.

Your committee has had numerous meetings during the past year in an effort to revise the existing statutes relating to the office of county coroner. During the course of these meetings several proposals have been drawn and in one way or another amended or rejected. During the legislature, members of this committee appeared frequently before the Committee on Public Health of the House of Representatives and at the time this report is written, the bill to revise the office of county coroner, to establish duties for the position and to create requirements for this office is still under consideration. Your chairman hopes when the legislature is concluded to submit a supplementary report to the House of Delegates concerning the history of this effort and its result.

J. E. JOHNSON, M.D., *Chairman*

PLANS AND SCOPES

W. J. Reals, Wichita, Chairman; H. L. Bogan, Baxter Springs; K. L. Graham, Leavenworth; C. C. Gunter, Quinter; J. A. McClure, Topeka; J. L. McGovern, Wellington; C. W. Miller, Wichita; J. C. Mitchell, Salina; J. L. Morgan, Emporia; R. P. Norris, Wichita; R. H. O'Donnell, Ellsworth; G. R. Peters, Kansas City; D. C. Reed, Wichita; M. E. Schulz, Russell; R. N. Shears, Hutchinson; E. F. Steichen, Lenora.

This special committee met and divided its activities into five sub-committees, some of which have made a considerable study.

One sub-committee is reviewing Society organization. This includes an analysis of committees, the organization of component societies and whether a revision of the Constitution and By-laws should be attempted. A second sub-committee deals with the budget and finances and is exploring all phases of the economics of the organization, including that of the JOURNAL. A third sub-committee is considering the question of membership—whether a further classification of members would be an advantage, and records concerning members as they are kept at the executive office. A fourth sub-committee deals with legislation and political activities, and the fifth is examining the general area of Society activities to see whether such things as the state meeting, for example, might be improved. This sub-committee is asking questions of whether the Society should engage in activities other than those currently occupying its attention.

The purpose of this special committee is to explore all activities and procedures of the Kansas Medical Society in the interest of economy and efficiency of operation. It was quickly learned that a project of this magnitude cannot be conducted in the period of one year. We expect to make supplemental reports on the tentative findings, together with recommendations from several of the sub-committees, at the time of the annual session. We will at that time also request authorization for a continuation of this project into the future and as suggestions can be made these will be presented for consideration before the House of Delegates.

The thorough understanding of an organization as complex as the Kansas Medical Society requires time. It is not altogether difficult to recommend changes but to do this with the assurance that improvement will result requires care. It is the hope of this committee that its effort can result in increasing the effectiveness of the Society and it is upon that basis that the committee has proceeded.

W. J. REALS, M.D., *Chairman*

POSTGRADUATE STUDY

G. E. Burket, Jr., Kingman, Chairman; W. H. Algie, Kansas City; C. C. Conard, Dodge City; M. H. Delp,

Kansas City; D. B. Foster, Topeka; J. K. Fulton, Wichita; T. W. Graham, Leavenworth; G. W. Hammel, El Dorado; G. C. Hutchison, Hays; D. Lawson, Topeka; A. N. Lemoine, Jr., Kansas City; E. L. Mills, Wichita; F. A. Moorhead, Neodesha; J. L. Perkins, Hutchinson; J. D. Rising, Kansas City; C. R. Rombold, Wichita; E. J. Ryan, Emporia; H. G. Whittington, Lawrence.

Since the last annual meeting of the Kansas Medical Society no problems or items of business have been presented to the Postgraduate Study Committee by the President, the Council, or the chairman of the Dept. of Postgraduate Education of the Medical School. Consequently no special meetings have been held.

On April 7 the committee will meet at the University of Kansas Medical School and join with the Postgraduate Education Department and the Medical School Committee in planning the postgraduate courses for 1963-1964.

It should be noted that the postgraduate courses have remained popular and of great benefit not only to the physicians of Kansas, but out-of-state physicians as well, as indicated by increased enrollment figures.

GEORGE E. BURKET, JR., M.D., *Chairman*

PUBLIC HEALTH

J. N. Blank, Hutchinson, Chairman; D. B. McKee, Pittsburg; J. L. Morgan, Emporia; G. P. Neighbor, Kansas City; L. E. Woodard, Wichita.

The Public Health Committee met once during the past year, February 3, 1963, at the Broadview Hotel in Emporia. This meeting was held with several members of the State Board of Health being present. Since this was the first meeting with members of the State Board of Health, considerable discussion was held clarifying the purpose of the committee prior to the discussion of business. Past methods of communication between the Board of Health and the Kansas Medical Society were considered. It was established that the customary procedure whereby the Board of Health presenting programs to Society committees for consideration and committee recommendation to the Council or House of Delegates for ultimate Society endorsement is completely acceptable to both organizations; however, in addition to the usual channels of communication a liaison such as the Public Health Committee could be most helpful to both organizations when the need arose.

The following motion was adopted by the committee: "The primary purpose of the Public Health Committee is that of serving as a liaison committee between the Kansas State Board of Health and the governing body of the Kansas Medical Society to be

available for consultation and to submit recommendations on public health issues upon the request of either the State Board of Health or the governing bodies of the Kansas Medical Society."

The agenda for the February 1963 meeting.

1. *Hearing Conservation Program for Children Through a U. S. Public Health Service Grant:*

The chairman reviewed the action of the Council at a meeting in Topeka on January 20, 1963, at which time the Council requested the Public Health Committee to further study and report on a recommendation by the Committee on Conservation of Hearing and Speech that the Kansas Medical Society endorse a request by the State Board of Health for a U. S. Public Health Service grant for funds to develop a hearing conservation program for children in Kansas.

A considerable number of questions were asked of Dr. Draemel and Dr. Gendel by the committee and in view of the complexity of the subject, for the sake of brevity, it is reported that all of the questions were answered to the complete satisfaction of the committee. The committee adopted the following motion: "Whereas the Committee on Conservation of Hearing and Speech has unanimously expressed its approval of the proposed hearing conservation program for children on a basis of known need and estimated acceptance, the Public Health Committee, in view of the necessity for immediate action, recommends to the Executive Committee that this program be endorsed with the understanding that the county board of education and county medical societies directly involved request such a hearing conservation survey be conducted and further that the medical profession be advised by letter of this project in order that the medical profession will be knowledgeable of the project before cooperation is requested by county boards of education."

2. *Diabetic Screening Program:*

Dr. N. W. Anderson briefly reported the Diabetic Screening Program has been in existence since August of 1956. To date a total of 57,738 individuals have participated. One thousand three hundred and sixty-two cases of diabetes have been detected. During 1962 screening programs were conducted in ten counties. We have had inquiries regarding this program from five counties for 1963. They are Harvey, Lane, Meade, Morton and Reno Counties. These requests are sent in from various community groups such as women's clubs, home economic agents, home demonstration units, county commissioners, and nurses.

When an inquiry is received from any local group concerning a diabetic screening program for their county, a letter is sent requesting that they discuss their desires with the county health officer and the

county medical society. Only after receiving concurrence from the county medical society and on request of the county health officer do we offer the assistance needed to expedite the screening program. A copy of the letter sent to the local groups is also forwarded to the county health officer for his information. It was reaffirmed that this program has and is being conducted along approved lines.

The committee adopted the following resolution:

"That this committee approves of the way in which the Board of Health conducts its diabetic screening program."

3. *A Program to Promote the Use of Throat Cultures for Accurate Diagnosis of Streptococcal Infections:*

It was reported that this program was recommended to the Council for endorsement by the Pathology Committee of the Kansas Medical Society and that the Council at its January 20, 1963, meeting unanimously endorsed this program as presented by Dr. John E. Johnson, chairman of the Pathology Committee.

It was unanimously agreed that no further action was needed.

4. *Other Business:*

Dr. Riedel asked that the committee consider two problems currently confronting the State Board of Health.

(1) Official requests for Board of Health personnel to administer, for example, influenza immunization shots to highway patrolmen.

(2) Emergencies in the State Office Building particularly, but elsewhere as well, when Board of Health personnel are requested to administer immediate medical aid to state employees or private citizens on state property. (A similar situation would be the instance where a private physician stops to administer to automobile accident victims.)

The following resolution was adopted by the Committee:

"This committee wishes to express its confidence in the State Board of Health in its desire not to engage in the practice of medicine, but confining its activities to those areas of public health and welfare which fall within its realm."

JOHN N. BLANK, *Chairman*

PUBLIC POLICY

F. E. Wrightman, Sabetha, Chairman; C. M. Barnes, Seneca; C. H. Benage, Pittsburg; W. F. Bernstorf, Winfield; T. P. Butcher, Emporia; W. P. Callahan, Wichita; O. W. Davidson, Kansas City; M. C. Eddy, Hays; E. S. Edgerton, Wichita; J. L. Lattimore, Topeka; F. L. Loveland, Topeka; N. E. Melencamp, Dodge City;

C. W. Miller, Wichita; L. S. Nelson, Sr., Salina; J. H. A. Peck, St. Francis; G. R. Peters, Kansas City; L. R. Pyle, Topeka; H. N. Tihen, Wichita.

The Committee on Public Policy consists of all past presidents of the Medical Society. This committee meets once each year for a breakfast on Tuesday morning at the time of the state meeting to discuss any and all problems relating to the welfare of the Kansas Medical Society. This committee is ready at all times to assist any individual, any committee or organization within the Kansas Medical Society in the implementation of any worthwhile and Society approved project.

Your chairman at this time wishes to announce the Committee on Public Policy will again meet on Tuesday morning, April 30, 1963 for breakfast at 7:30 a.m. at the Holiday Inn, Salina.

F. E. WRIGHTMAN, M.D., *Chairman*

PUBLIC RELATIONS

L. S. Nelson, Sr., Salina, Chairman; S. A. Anderson, Clay Center; C. H. Benage, Pittsburg; B. H. Buck, Jr., Wichita; D. L. Clinton, Lawrence; F. T. Collins, Topeka; C. C. Conard, Dodge City; H. F. Coulter, Mission; J. L. Lattimore, Topeka; J. W. Manley, Kansas City; R. M. Mathews, Prairie Village; N. E. Melencamp, Dodge City; R. T. Parmley, Wichita; L. W. Patzkowsky, Kiowa; E. W. J. Pearce, Shawnee Mission; J. G. Phipps, Wichita; A. Scott, Junction City; D. W. Selzer, Topeka; J. G. Shellito, Wichita; D. J. Smith, Overland Park; G. G. Stephens, Wichita; N. V. Treger, Topeka; J. R. Twinem, Olathe; W. O. Wallace, Atchison; J. W. Welch, Halstead.

In some ways the efforts of this committee, composed of 26 members of our society, were successful. Our one major effort was a meeting in Topeka, at which time we heard Governor Anderson; Honorable Mr. Paul Wunch, chairman pro tem of the Kansas Senate; and Mr. Charles Arthur, speaker of the House of Representatives declare that some form of implementation of the Kerr-Mills Law for the care of the needy aged would be attempted in the 1963 session of the Kansas Legislature. This was truly a gratifying experience to the few members of your committee in attendance.

It was disappointing that so few took sufficient interest to make this year a greater success—which it might have been. Your chairman takes the blame for this and believes that some of the factors which caused the partial failure are understood and will not be repeated.

We urge every doctor who is appointed to any one of the 46 standing committees to attend meetings so as to be conversant with its program and to contribute

ideas and suggestions for its proper functioning. We owe it to our profession, to our officers, who give so unselfishly of time (which is money), and to the health of Kansas citizens to function collectively through those committees. I know that every doctor can get done *all* that he really wants to do.

The chief objectives of your Public Relations Committee the past two years have been to implement Kerr-Mills legislation in Kansas so that needy aged could have good care, and to improve the image of Organized Medicine in the minds of the general public. Time alone will prove success or failure.

This I must add, Mr. Oliver Ebel has a superior ability in public relations. He has labored tirelessly and effectively to gain the objectives outlined. He is a delightful public speaker and leaves every audience wishing he would continue longer. He tells people about us as we really are and they always like us better for his kindly ministrations.

With your help the next effort in the Public Relations Committee can be most successful.

L. S. NELSON, SR., M.D., *Chairman*

RELATIONS WITH BAR ASSOCIATION

J. A. Segerson, Topeka, Chairman; L. G. Allen, Jr., Kansas City; J. O. Baeke, Overland Park; B. W. Barker, Wichita; E. S. Brinton, Wichita; G. E. Burket, Jr., Kingman; S. T. Coughlin, Larned; T. R. Hamilton, Kansas City; C. D. Hensley, Jr., Wichita; V. C. Hollenbeck, Eureka; J. B. Jarrott, Hutchinson; C. S. Joss, Topeka; D. G. Laury, Ottawa; G. R. Maser, Mission; C. V. Minnick, Junction City; R. F. Morton, Arkansas City; H. P. Palmer, Scott City; W. G. Parker, Hoxie; E. J. Ryan, Emporia; C. O. Tompkins, Newton.

No official meeting of the complete Committee on Relations with the Bar was held in 1962. In three years' experience on this committee, your chairman is aware of only one meeting where the committee of the Medical Society met independently to discuss and agree upon a program to pursue in behalf of the Kansas Medical Society with the Kansas Bar Association. All the meetings have been held with the Bar Association, in which members of the Medical Society, often unfamiliar to each other, have met and discussed an agenda heavily laden, if not exclusively centering around legislative matters. Usually the agenda was provided by the Kansas Bar Association or the Executive Director of the Kansas Medical Society, but in no instance to my knowledge has there been any prepared agenda of the considered opinion of the committee appointed by the President of the Kansas Medical Society.

In 1960 and 1961 at least, such activities yielded, in your chairman's opinion, negative results, if the goal of the committee is to improve relations with

the Bar Association. In the first instance, the Kansas Medical Society committee, again strangers to each other, agreed to a recommendation clearly inimical to the best interests of the Kansas Medical Society and had to be salvaged from this position by a second meeting in Emporia, at which the attorneys from both the Kansas Medical Society and Kansas Hospital Association were present with the Kansas Bar Association members. In 1961, at a dinner meeting in the Jayhawk Hotel, the discussion ended in rancor and disaffection, rather than in positive relationships with the Bar.

Your chairman therefore humbly recommends that the House of Delegates once again review carefully the advisability of a Committee to Improve Relations with the Bar, how many members should be appointed for optimal relationships with a six-member Bar Association Committee, and finally, what instructions regarding the general objectives and programs might be available to the chairman and the future members of the committee.

JOHN A. SEGERSON, M.D., *Chairman*

RELATIONS WITH RELIGION

W. P. Williamson, Kansas City, Chairman; R. F. Cavitt, Shawnee Mission; W. M. Cole, Wellington; W. C. Goodpasture, Wichita; L. W. Hatton, Salina; W. O. Martin, Topeka; H. R. Schmidt, Newton; E. D. Yoder, Denton.

Plans for the inauguration of this newly organized committee have been dependent upon recommendations from the American Medical Association. Negotiations for a meeting are in progress at the time this report is required for the JOURNAL. It is hoped the meeting can be held prior to the session of the House of Delegates and if this can be accomplished, a first report of this new committee will be given at the time of the House of Delegates meeting.

WILLIAM P. WILLIAMSON, M.D., *Chairman*

RURAL HEALTH

E. D. Yoder, Denton, Chairman; T. V. Batty, Mission; V. E. Brown, Sabetha; R. E. Bula, Hays; T. D. Ewing, Larned; F. G. Freeman, Pratt; R. E. Grene, Junction City; W. A. Harms, Hesston; H. W. Hiesterman, Quinter; P. H. Hostetter, Manhattan; P. U. Hunsley, Belleville; H. F. Janzen, Hillsboro; F. Law, Ellinwood; B. N. Lies, Colwich; D. L. Marchbanks, Salina; M. L. Masterson, Paola; F. A. Moorhead, Neodesha; C. M. Nelson, Oberlin; R. L. Obourn, Eureka; C. E. Partridge, Emporia; L. W. Patzkowsky, Kiowa; C. R. Svoboda, Chapman; H. O. Williams, Cheney; M. H. Waldorf, Jr., Greensburg; D. H. Wood, Pittsburg.

The Committee on Rural Health held its annual meeting with the Committee on Medical Schools on the morning of March 10, 1963, at the Kansas University Medical Center. A report of this portion of the meeting is contained in the committee report on Medical Schools.

The Rural Health Committee then met with the Assistant Dean of the Medical School, Dr. Robert Hudson, to review those communities in Kansas seeking the services of a physician. The committee spent several hours comparing the communities on the Kansas Medical Society's Physician Placement list with the communities contained on the list of the Medical School.

The Rural Health Committee can be justly proud of the excellent job being carried out in helping communities find physicians and physicians finding a proper community in which to locate. A program has been developed whereby an up-to-date list of communities is being kept and a current list of physicians seeking locations in Kansas is available. Over the past year this program has resulted in both lists being kept current with a complete revision being done on a quarterly basis. With the new system in effect for over a year the committee reports a greatly increased use of this service by both communities and physicians.

Four Kansas representatives attended the Rural Health Conference in Des Moines, Iowa, on May 18 and 19, 1962. The theme of the Congress was "Good Rural Health—Our Nation's Wealth." Many excellent ideas and new programs were promulgated at this conference and are being utilized by the committee in its work. The committee hopes that a supplemental report can be made at the time of the annual meeting in regard to the number of physicians placed through the Kansas Medical Society's Physician Placement Bureau.

E. D. YODER, M.D., *Chairman*

SAFETY

A. C. Eitzen, Hillsboro, Chairman; P. J. Antrim, Attica; G. S. Bascom, Manhattan; N. C. Bos, Hutchinson; H. L. Bryant, Coffeyville; W. M. Cole, Wellington; T. C. Duckett, Hiawatha; W. T. Elnen, Wichita; L. G. Glenn, Protection; J. W. Graves, Wichita; J. A. Grove, Newton; A. C. Mitchell, Lawrence; R. A. Nash, Olathe; J. H. A. Peck, St. Francis; R. C. Polson, Great Bend; N. K. Pullman, Wichita; M. J. Rucker, Sabetha; N. C. Smith, Arkansas City; H. E. Snyder, Winfield; H. B. Sullivan, Shawnee Mission; R. D. Warren, Hanover; R. P. Weltmer, Beloit.

The Committee on Safety enjoyed a most produc-

tive and successful year. Two meetings were held with six members of the committee attending the first meeting and thirteen persons attending the second. In addition to these two formal committee meetings, Mr. Imboden and I attended six additional meetings where we cooperated with such organizations as the Kansas Farm Bureau, Kansas State Board of Health, Kansas Nurses Association, and many other groups, including state officials working in the field of safety, to develop legislation and state-wide safety programs, many of which have been acted upon by our committee.

At the time of our first meeting in June, 1962, the committee discussed the following items: physical examinations for persons licensed to drive in Kansas; possible compulsory seat belt legislation; possible motor vehicle inspections; legislation in regard to driver education and driver training; and the possibility of postgraduate courses in emergency treatment of injuries. In addition to these the committee talked about other miscellaneous safety programs.

At the time of the second meeting of the committee in February, 1963, the committee heard a presentation by Mrs. John Warren, chairman of the safety committee of the Woman's Auxiliary, for the development of a safety belt campaign for physicians. It was agreed that the Woman's Auxiliary should be encouraged to carry out this project and the committee unanimously voted to commend them for their progressive attitude in this activity. Since that time we have cooperated with Mrs. Warren in making arrangements for an exhibit at the annual meeting at which time the Auxiliary will make seat belts available at cost to members of the medical profession and others in attendance. Arrangements are being made with local Salina garages to install these belts at a reduced rate.

The committee saw a film entitled "Broken Glass" and are attempting to make the necessary arrangements in order that the film may be shown at various times during the annual meeting.

House Bill 86 (eye examinations) was discussed and the committee heard a report that this bill had been returned to the committee on Roads and Highways for further study.

Compulsory seat belt legislation was discussed and the committee went on record as endorsing the passage of such legislation. In regard to motor vehicle inspection, the committee was of the opinion that the establishment of such a program would be quite expensive. Because of the great amount of legislation, which would require considerable expenditure on the part of our state government, the committee voted only to endorse the principle of motor vehicle inspection. The committee also went on record as favoring legislation on driver education and driver training.

The committee further endorsed the principle of an examination prior to licensure. The committee learned of a new program known as the "Immediate Care of the Sick and Injured" and if the Kansas University Medical Center were to see fit to offer such a course to paramedical personnel, the Committee on Safety would endorse this program.

Inasmuch as one out of every seven persons occupying hospital beds are accident victims, the committee recommends the employment by the Kansas State Board of Health of a full time person in the capacity of health education in accident prevention. The committee endorsed in principle the Rural Health Six County Accident Prevention Survey now being conducted by the Health Education Division of the Kansas State Board of Health. The committee further recommended this same principle for other accident prevention surveys in the fields of public safety, water safety, home safety, etc.

A. C. EITZEN, M.D., *Chairman*

SCHOOL HEALTH

C. M. Barnes, Seneca, Chairman; M. D. Athon, Overland Park; W. F. Bernstorf, Winfield; R. D. Boles, Dodge City; V. L. Branson, Lawrence; R. E. Bula, Hays; J. A. Butin, Chanute; E. J. Chaney, Belleville; F. H. Chard, Wichita; O. R. Cram, Jr., Larned; F. A. Dlabal, Wilson; E. S. Gendel, Topeka; E. D. Greenwood, Topeka; R. Greer, Topeka; H. P. Jubelt, Manhattan; V. J. Loganbill, Moundridge; O. W. Longwood, Stafford; H. Lutz, Augusta; M. L. Masterson, Paola; C. T. McCoy, Hutchinson; W. E. Myers, Iola; C. M. Nelson, Oberlin; V. Page, Plainville; R. R. Pettegrew, Leawood; R. R. Snook, McLouth; S. Zweifel, Jr., Kingman.

During the 1962-63 year, the School Health Committee held two meetings, and although this may appear to be a small number of working sessions, its work is closely interrelated to other school health activities occurring in Kansas. In many cases, the School Health Committee members have initiated, sponsored and helped to prepare many programs throughout the state.

Basic to the health of young people and the health of our future citizens, is the whole subject of health education in the schools. Members of the committee serve on the Curriculum Committee of the Kansas State School Health Advisory Council, on local school boards, and participate and help to sponsor the School Health Symposium Postgraduate Course at K.U. Specific contributions of the School Health Committee of the Medical Society to these activities are:

1. Planning, coordinating and taking part in the Annual Kansas Coaches' meeting in Wichita in Au-

gust, 1962, in which the guest speaker was Tom Schaffer, M.D., Pediatrician, and member of the AMA Committee on Medical Aspects of Sports.

2. Members assumed an active role in the post-graduate course on school health of the Kansas University Medical Center, which attempts to present to the physician and other personnel in the state interested in school health some of the latest advances and thinking in this area.

3. Through membership in the Kansas School Health Advisory Council helping to sponsor a spring program in which 200 persons including many physicians from all over the state participated in an open unstructured free-for-all discussion of school health problems.

4. Members served as stimulators to local activities in school health in various parts of the state including symposiums on physical fitness, sex education, medical quackery, etc.

Resolutions presented by the committee to the annual Kansas Medical Society meeting included a resolution about the need for health education in the schools with recommendations that component medical societies of Kansas offer to public schools within their jurisdiction, the services of their membership in conducting health education for students.

The problem of venereal disease in teenagers was the subject of one meeting and resulted in a second resolution to the House of Delegates of the Kansas Medical Society, that a committee on control of venereal disease be appointed, or some other appropriate committee, to work with state and local V.D. control personnel to understand the scope of the program and problem in Kansas.

During the second session, a résumé of the work of the Medical Society, with the Kansas State School Health Advisory Council was reviewed. Enumerated activities included: (1) The above mentioned planning and participation in the coaches' meeting at which 250 coaches and 57 physicians were present, not only for the presentation, but for discussion groups that followed. (2) The School Health Committee's role in developing the pre-participation examination for school athletes, and the fact that the communities where it has been used, have found much value in its use. (3) The pamphlet, *Emergency Procedures for Accidents and Illness in Kansas Schools*, which was largely prepared by the School Health Committee, but which was developed for teachers and school personnel in cooperation with the School Health Advisory Council, has now been distributed to almost the entire teaching profession in Kansas, approximately 24,000 teachers. School administrators have been enthusiastic in their requests for this pamphlet. (5) It was reported that the support of the Kansas Medical Society to the School Health

Advisory Council, has been one of the chief motivating elements in physician participation, interest, and contribution to the problems of school health in Kansas.

In a discussion of health education as a requirement subject to all levels of schooling and especially college, it was the chairman's opinion that members of the School Health Council and the Medical Society should work together to outline a suggested course of study for teachers who are preparing to become teachers of health. Within the committee, the following subjects were outlined:

1. Anatomy and physiology.
2. Communicable disease and immunization.
3. Knowledge of common infectious diseases.
4. First Aid.
5. Emotional problems and mental hygiene.
6. The values of physical examinations.

7. Physical education—an improved course needed in which exercising can be taught of a type that may continue throughout the student's life.

8. Nutrition and food.

9. Sex education.

10. Quackery.

The committee voted to meet with members of the Curriculum Committee of the State School Health Advisory Council to suggest this material to them.

The proposed legislation on requiring health examinations of school employees was discussed, and the committee voted unanimously to support in principle, legislation requiring pre-employment and periodic examinations of all school employees.

The committee discussed the problem of compulsory retirement of school personnel, and recommended that some means be made available to employees for the individual to initiate to the school systems an appeal for continuation of their services after they reach retirement age. The committee believes that retirement should be determined by an evaluation of competence and not a chronological evaluation.

The committee looks ahead to increased interest in the area of school health by members of the Society and the community at large. School Health Committees in local county medical societies have become more active in several areas of the state, and it is believed that the activities of the State School Health Committee of the Medical Society can inspire more of this type of participation.

CONRAD M. BARNES, M.D., *Chairman*

STATE MEETING FORMAT

H. St. C. O'Donnell, Ellsworth, Chairman; Q. C. Huerter, Bethel; L. S. Nelson, Jr., Salina; J. L. Perkins, Hutchinson; R. K. Purves, Wichita; J. E. Roderick,

Salina; E. J. Ryan, Emporia; R. Sohlberg, Jr., McPherson; R. C. Tozer, Topeka.

This committee met in Salina on Sunday, July 29, 1962, and considered in detail the general format of the Salina meeting. Present at this occasion were the general chairman and committee members of the host society.

Facilities were explored and visited. The general format was decided upon. Various special considerations were discussed but since all of these are currently demonstrated by the meeting now in progress, they are not repeated in detail at this time.

The second portion of this meeting concerned preliminary plans for the 1964 annual session to be held at Topeka upon invitation of the Shawnee County Medical Society. It has been announced that Louis Cohen, M.D., of Topeka, will be the general chairman of the meeting and that John Crary, M.D., Topeka, is chairman of the scientific program. Your present committee recommends the general format employed at the meeting in Salina be again adopted for the Topeka meeting and that details of this event be planned by the Format Committee appointed for next year.

H. ST. CLAIR O'DONNELL, *Chairman*

STORMONT LIBRARY

B. M. Powell, II, Topeka, Chairman; R. T. Cotton, Topeka; M. M. Halley, Topeka; H. G. Kroll, Topeka; R. C. Lawson, Topeka; J. D. MacCarthy, Lawrence; W. A. Warren, Wichita; W. H. Zimmerman, Topeka.

At the time this report is written the Kansas legislature is still in session. A bill to move the Stormont Medical Library from the State House to Stormont-Vail Hospital is currently under consideration. This bill would authorize the Shawnee County Medical Society to supervise the operation of this library. This bill is endorsed by the Shawnee County Medical Society with the approval of the Council of the Kansas Medical Society. It is supported by members of this committee.

Should the Kansas legislature enact this piece of legislation the chairman will make a supplementary report concerning the proposed operation of the library at the time of the meeting of the House of Delegates.

Kansas University Medical Center Library has been contacted regarding extension and enhancement of its services to other medical libraries and "to qualified individuals in all branches of the health sciences," (paramedical groups such as medical technologists, x-ray technicians, and nursing groups) and this committee has been attempting to get an additional appro-

priation for Kansas University Medical Center Library for this purpose.

B. M. POWELL, II, M.D., *Chairman*

STUDY OF HEART DISEASE

L. E. Peckenschneider, Halstead, Chairman; D. R. Bedford, Topeka; J. W. Butin, Wichita; E. W. Crow, Wichita; W. R. Durkee, Manhattan; C. W. Erickson, Pittsburg; C. F. Henderson, Parsons; L. H. Leger, Kansas City; P. W. Morgan, Emporia; M. C. Murfitt, Lindsborg; L. F. Schmaus, Iola; R. L. Sifford, Wichita; C. T. Sills, Newton; B. G. Smith, Arkansas City; H. B. Stryker, Jr., Concordia; C. C. Underwood, Emporia; D. C. Wakeman, Topeka.

The Committee for the Study of Heart Disease met on October 21, 1962, at the Broadview Hotel in Emporia, Kansas. We had as guests Dr. Katherine Pennington of Wichita, and Mr. W. G. Green, Executive Director of the Kansas Heart Association.

The purpose of our meeting on this date was to hear and discuss a proposed state-wide prophylaxis program for the prevention of secondary attacks of Rheumatic Fever. Dr. Pennington, who is Chairman of the Rheumatic Fever and Congenital Heart Disease Committee of the Kansas Heart Association and under whose sponsorship the proposed program will be conducted, was asked to explain the program. There was a full discussion among all members of the committee present.

It was the consensus of those present that there was a need for such a low-cost drug program in Kansas; however, since there was not a quorum present, a vote was not asked for.

Mr. Green brought out the fact that 33 of the 50 states currently had a state-wide prophylaxis program, and most of these were originally started by Heart Associations. He also pointed out the fact that those programs now under sponsorship of official agencies—such as the State Board of Health Departments and Crippled Children's Commissions, were free drug programs. It was the consensus of the committee that Kansas should have a low cost program, rather than a free drug program.

The second meeting of the Study of Heart Disease Committee was held on Sunday, January 20, 1963. This meeting was for the purpose of discussing the problem of making prophylactic drugs available below the usual retail prices and was held with the Council of the Kansas Medical Society. It was brought out at this meeting that the Kansas Pharmaceutical Association explained in a letter to Mr. James Imboden of the Kansas Medical Society's Topeka office why their association's Executive Board felt that it could not

enter into sponsorship of a statewide Rheumatic Fever prophylaxis program at this time. They explained that the antitrust council of the National Association of Retail Druggists has recommended that associations "scrupulously avoid any activity which might be construed as imposing restrictions upon the individual retail pharmacist's freedom to independently decide how his business will be conducted." In our committee meeting it was reported that individual retail outlets have been supplying prophylactic penicillin tablets, on family doctors' orders, at prices far under retail, which is apparently their privilege.

Dr. J. L. Morgan also reported that "the committee members had different opinions as to whether this be endorsed, despite the fact that the Heart Association Committee (physicians) had advised endorsement by the Kansas Heart Association. It was therefore decided to let our committee's conclusion be reached after council considerations."

Due to my illness in January, P. W. Morgan, M.D., a member of the Committee for the Study of Heart Disease, acted in my place and had his brother, J. L. Morgan, M.D., present to the Council of the Kansas Medical Society a report of our Heart Committee—which he did, ably and well. The Council endorsed the committee's recommendations and I wish to take this opportunity to thank both Dr. P. W. Morgan and Dr. J. L. Morgan for their help.

L. E. PECKENSCHNEIDER, M.D., *Chairman*

HEADACHES

Estimates of the number of Americans suffering from headaches at any one time range from 8 per cent to as high as 65 per cent, according to *Patterns of Disease*, a Parke, Davis & Company publication for physicians. The tension headache ranks number one among head pains, accounting for some 85 per cent followed by migraine headaches, to which an estimated 5 per cent to 10 per cent of the general population are subject. Less than 1 per cent of headaches encountered by physicians stem from illness which can be considered life-threatening.

Tension headaches are related to emotional conflict, according to *Patterns*. "Feelings of depression or symptoms suggestive of depression were acknowledged by 40 per cent of patients." The headaches rarely last less than 1 hour; they may persist for weeks.

Migraine headaches occur two to three times more frequently among women than men. Symptoms result from constriction and subsequent dilatation of certain arteries in the head. "Persons subject to migraine are described as intense, driving, perfectionistic, and compulsive. They tend to be overly con-

scientious and meticulous and have difficulty in expressing their aggressive feelings. . . . Heredity has found to be a factor in more than 60 per cent of cases," according to *Patterns*.

Migraine attacks follow a three-phase pattern: during the first phase, bright flashes of light before the eyes, blurred vision, drowsiness, nervousness, vertigo, and sensitivity to light may warn of the headache to come. In the second stage, head pain is felt on one side of the head, then perhaps on both sides; there is loss of appetite, nausea, vomiting and sensitivity to light. In the final stage, some tension and pain remain in the neck and head muscles, and the patient is exhausted and drowsy.

A study of some 1,300 patients suffering from headache revealed that 43 per cent of them had elevated blood pressure. However, factors other than blood pressure level probably influence the onset of headaches in hypertensive patients, according to *Patterns*: more than 50 per cent were found to be suffering from tension headaches. Head pain occurred most frequently in the morning, and was located most often in the frontal or occipital area of the head.

Headaches brought on by release of histamine are more severely painful than hypertensive (tension) and migraine headaches, according to *Patterns*. They strike on one side of the head, generally the right, involving the eye and surrounding area of the skull, the temple and upper jawbone, and occasionally the shoulder. On the affected side, the eye tears and becomes congested and there is nasal stuffiness.

Migraine headaches attack more women than men, generally between the ages of 15 and 30; histamine headaches attack more men, generally between the ages of 25 to 50; and hypertensive (tension) headaches attack men and women impartially, generally between the ages of 30 and 50, according to *Patterns*.

One of the factors that may trigger migraine headaches may be serotonin, which functions as a neurohormone, according to *Patterns*. In a group of patients treated prophylactically with a substance which counteracts serotonin, about 75 per cent experienced no subsequent headaches.

Responses to a questionnaire sent to the nation's physicians by Parke, Davis & Company for *Patterns* indicate that most of them believe headache is not related to occupation. Almost four out of five physicians responding reported that headache occurs more frequently among women than men, and an even higher proportion reported that tension headache is the type most frequently encountered in their practice. About three of four physicians responding believe that there is a "migraine personality," the personality characteristic reported most frequently by the physicians being sensitivity to criticism.



Along The BOOKSHELF

Stormont Medical Library

RECENT ACQUISITIONS

- Adler, Francis. Textbook of ophthalmology. Saunders, 1962.
- Ludovici, L. J. Discovery of anaesthesia. Crowell, 1961.
- Schreiner, George E. Uremia, biochemistry, pathogenesis & treatment. Thomas, 1961.
- Bloomfield, A. Communicable diseases. Un. of Chicago, 1962.
- Rouché, Berton. The incurable wound. Little, Brown, 1958.
- Brooks, Stewart. Basic facts of medical microbiology. Saunders, 1958.
- Meyer, Arthur. Human generation. Stanford University Press, 1956.
- Laird, William. The philosophy of medicine. Education Foundation, Inc., 1956.
- Weiss, Deso A. The chewing approach in speech and voice therapy. S. Karger (Switzerland).
- Bensley, E. H. Handbook of treatment of acute poisoning. Renouf, 1953.

MONOGRAPHS AVAILABLE IN THE LIBRARY

Genito-Urinary System (con't)

- Flocks, Rubin. Radiation therapy of early prostatic cancer. Thomas, 1960.
- Kenyon, Herbert. The prostate gland, revised. Random House, 1959.
- Kinsey, Alfred. Sexual behavior in the human male. Saunders, 1948.
- Krafft-Ebing, Richard. Psychopathia sexualis . . . a medico-forensic study. English adaptation of 12th German edition. Rebman, 1922.
- Reinhardt, James. Sex perversions and sex crimes. Thomas, 1957.

Nervous System

- Association for research in nervous and mental dis.,

- life stress and bodily disease. Proceedings of the Assn., 1949. Williams & Wilkins, 1950.
- Baker, Abe, ed. Clinical neurology, 1st ed. Hoeber-Harper, 1955.
- Baker, Abe, ed. Clinical neurology, 2nd ed., in 4 vol. Hoeber-Harper, 1962.
- Ciba foundation. The spinal cord, a symposium. Little, Brown, 1953.
- DeWeese, David. Dizziness; an evaluation and classification, American lecture series. Thomas, 1954.
- Elliott, Harry. Textbook of the nervous system, 2nd ed. Lippincott, 1954.
- Epstine, Bernard. The spine; a radiological and text atlas, 2nd ed. Lea & Febiger, 1962.
- Ford, Frank. Diseases of the nervous system in infancy, childhood and adolescence. Thomas, 1960.
- Grinker, Roy. Neurology, 2nd ed. Thomas, 1937.
- King, Henry. Psychomotor aspects of mental disease; an experimental study. Harvard University Press, 1954.
- Merritt, Hiram. Textbook of neurology, 2nd ed. Lea & Febiger, 1959.

Announcement: Stormont Medical Library now has facilities to furnish Xerox service, upon request, at 5c per page.

Books and periodicals will be sent anywhere in the state. You pay only the postage, four cents for the first pound and one cent for each additional pound. Address requests to:

Mrs. Betty Culley, Librarian
Stormont Medical Library
c/o The Kansas State Library
State House, Topeka, Kansas
Telephone: CEntral 5-0011, ext. 297



Book REVIEWS

MEDICAL STATE BOARD QUESTIONS & ANSWERS, Harrison F. Flippin. W. B. Saunders Co., Philadelphia, 1962. 507 pages illustrated, \$9.50.

At first glance the reviewer of this 500-page book with chapters outlined according to the traditional curriculum of medical school can hardly resist the question as to its ultimate usefulness. It adds nothing to the body of medical information in its question and answer form. Its tone is generally semantic, its answers often stereotyped, incomplete and uninspired.

On the other hand, no physician can fail to remember his own apprehension in confronting examinations in medical school and his need for support, and confidence, often gained through revival of concepts already learned from contact with such question-answer sources. It is in this sense that a reviewer can see the real value of such a publication, and the fact that it is now completing its tenth edition is ample testimony to its usefulness. The index is most complete and helpful and the sections on medical jurisprudence and public health are particularly useful and practical.—*J.A.S.*

PREVENTIVE MEDICINE IN WORLD WAR II—Communicable Diseases, Volume V. Published by Medical Department, U. S. Army.

Under the able editorship of Colonel John Boyd Coates, Jr., the group of books relating the medical experiences of World War II have been appearing at more-or-less regular intervals for several years. This volume, the fourth in the series on preventive medicine, is the sixteenth volume of the total group. It is of the same high caliber as its predecessors.

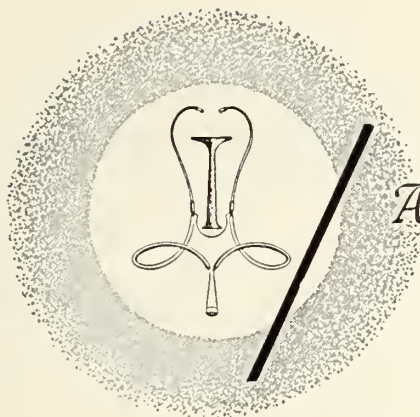
The book is devoted to those diseases transmitted by direct contact or by unknown means, and it relates the vast experiences of the military services in this field. In addition to the clinical summary of the dis-

ease as it relates to military expeditions, there are statistics of the incidence of the diseases under varying conditions and in different localities, and a presentation of the epidemiologic measures used to combat them, with an analysis of their effectiveness. The more common diseases discussed include hookworm, fungus infections, impetigo, scabies, trachoma, infectious mononucleosis, viral hepatitis, and venereal diseases (to which a long chapter is devoted). Less common diseases discussed include, among others, actinomycosis, leprosy, leptospirosis, schistosomiasis, and yaws.

Anyone interested in the control of this group of diseases (and what physician is not?) can profit greatly by the information included in this volume. It should have significant application at the present time, in our attempts to improve health conditions over the world. It is to be hoped that as fine a book as this will not be allowed to reside "in the file" until needed for another military experience.—*O.R.C.*

TEXTBOOK OF OPHTHALMOLOGY, F. H. Adler, W. B. Saunders Co., Philadelphia, 1962. 560 pages, 288 illustrations. \$9.

The new edition of Adler's *Textbook of Ophthalmology* contains an excellent selection of vital information for the non-specialist in the identification of specific ocular entities and the associated ocular changes in systemic disorders. Newer sections on in-born errors of metabolism as they affect the visual apparatus, birth injuries and ocular involvement in cerebral hemorrhage are coupled with 288 illustrations to assist in the recognition of the more common ocular disturbances met with in every day practice. An opening chapter deals with symptom diagnosis prior to four helpful chapters dealing with the more acceptable and most productive methods of examination. This is a good book justifying frequent reference.—*L.L.C.*



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the Doctor's CALENDAR. Notice of the session is posted in advance to allow the physician time to make preparations.

APRIL

- Apr. 21-22 *Otorhinolaryngology*—American Laryngology Association, Hollywood, Florida. Contact: Lyman G. Richards, M.D., 12 Clovelly Road, Wellesley Hills 81, Mass.
- Apr. 21-23 Southwest Allergy Forum, San Antonio. Contact: Boen Swinny, Jr., M.D., 2-G Medical Professional Building, San Antonio 12, Tex.
- Apr. 21-24 *Obstetrics and Gynecology*—American College of Obstetricians and Gynecologists, New York City. Contact: Craig W. Muckle, M.D., 79 W. Monroe St., Chicago, Ill.
- Apr. 22-27 15th Annual Meeting, Southwestern Surgical Congress, and First Mexican-North American Surgical Congress, Mexico City. Contact: R. B. Howard, M.D., 301 Pasteur Bldg., Oklahoma City, Okla.
- Apr. 29-May 1 Annual Meeting of the Kansas Medical Society, Marymount College, Salina, Kan.
- Apr. 29-May 4 Oral and clinical examination (Part II) for candidates to the American Board of Obstetrics and Gynecology, Chicago. Contact: Robert L. Faulkner, M.D., 2105 Adelbert Road, Cleveland, Ohio.

MAY

- May 1-3 Scientific Sessions, The Medical and Chirurgical Faculty of the State of Maryland, Baltimore. Contact: Wm. Carl Ebeling, M.D., 1211 Cathedral St., Baltimore, Md.
- May 1-4 *Pediatrics*—University Hospitals of Cleveland, Atlantic City, New Jersey. Contact: Wm. B. Weil, Jr., M.D., University Hospitals of Cleveland, University Circle, Cleveland, Ohio.

- May 8-10 *Urology*—Cleveland Clinic. Held in Chicago. Contact: Harry M. Spence, M.D., Cleveland Clinic, 2020 E. 93rd St., Cleveland, Ohio.
- May 21-25 American Association on Mental Deficiencies, Portland, Oregon. Contact: Dr. Neil A. Dayton, 1601 W. Broad St., Columbus, Ohio.
- May 23 14th annual Dr. F. G. Thompson, Sr. Lectureship, Clinic Building, 902 Edmond St., St. Joseph, Missouri. Dr. Jan H. Tillsch, Mayo Clinic, will speak on "Contributions of the Aerospace Age to Medicine."

POSTGRADUATE COURSES

- Apr. 22-24 *Anesthesiology*—University of Kansas School of Medicine.
- Apr. 24-27 *Trauma*—The Chicago Committee on Trauma of the American College of Surgeons. Contact: John J. Fahey, M.D., 1791 Howard St., Chicago, Ill.
- Apr. 29-May 3 *The Medical Care of the Adolescent*—Harvard Medical School. Contact: Asst. Dean, Courses for Graduates, Harvard Medical School, Boston 15, Mass.
- May 20-23 *Surgery*—University of Kansas School of Medicine.
- May 20-24 *Physiological Aspects of Cardiopulmonary Disease*—Indiana University Medical Center, Indianapolis, Indiana. Sponsored by the American College Physicians.
- May 21 *Practical Aids in Diagnosis of Hemorrhagic Disorders*—Northwest Missouri Chapter of the Academy of General Practice and the University of Kansas School of Medicine. Contact: John P. Mabrey, M.D., Plattsburg, Mo.
- May 23-24 13th Annual Colorado Intern-Resident Clinic, University of Colorado Medical Center, Denver, Colo.



LEEMAN C. JOSLIN, M.D.

Leeman C. Joslin, 66, physician at Harper for 30 years, died March 7, 1963, at Wesley Hospital in Wichita.

He was born near Salina on July 22, 1896. He received a bachelor of science degree from the University of Kansas in 1920 and his doctor of medicine degree in 1922.

Dr. Joslin began his medical practice at Pratt and Cullison in 1923, later moving to Liberal. In 1931 he moved to Harper where he founded the Joslin Hospital.

Active in community affairs, he had served on the city council and as president of the rural high school and city school boards. He was a member of the Harper Masonic Lodge, Lions Club, and the board of the University of Kansas School of Medicine.

Dr. Joslin is survived by his wife, Thelma, and two sons.

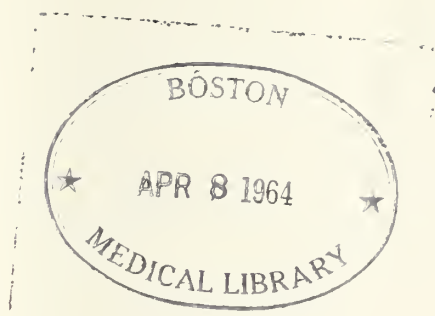
FOWLER B. POLING, M.D.

Fowler B. Poling, 48, Wichita, died February 17, 1963, at Wesley Hospital from injuries received in a two-car collision near Wichita.

Born November 23, 1914, at Arlie, Texas, he was graduated from Oklahoma Baptist University at Shawnee in 1936 and from the Oklahoma University School of Medicine in 1940. He interned at University Hospital, Iowa City, Iowa, and took residency at Halstead (Kansas) Hospital.

Dr. Poling headed the Poling Neuropsychiatric Center in Wichita. He had been on the City-County Board of Health and was active in the development of the Mental Health Clinic in Wichita. He served as director of the Wichita Association for Retarded Children.

His survivors include his wife, Betty, a daughter and three sons.



Operate or Not?

Everyday Problems in Vascular Surgery

C. ROLLINS HANLON, M.D.,* *St. Louis*

THE TITLE OF THIS presentation is not designed to indicate that *you* see every day the problems that I'm going to talk about. Indeed, it's not meant to mean that *I* see them every day. Rather it is designed to present an "everyday" or reasonably simple approach to certain vascular problems, which will aid in their correct management even if one encounters them only rarely.

One of the commonest problems in vascular surgery is varicose veins; I'm going to avoid talking about them. I'm going to talk mainly about arterial problems which present themselves to the practitioner under two main guises, as lumps and as vascular insufficiency. Lumps and vascular insufficiency constitute simple, important categories of vascular disease on the arterial side. I shall begin with lumps in an unusual way by indicating that I have no slides or illustrations. This is because I wish to discuss general approaches rather than details of technique.

Lumps can be real or imaginary. The patient may think he has a lump but it may not be a lump at all; he needs reassurance. On the other hand, there may actually be a lump of which he is unaware but his doctor has noticed it and feels that it needs appraisal. This lump may be a normal structure; again, reassurance is all that is needed.

One of the commoner lumps is the pulsating abdominal mass which generally indicates an aneurysm

of the abdominal aorta. Aneurysms of the abdominal aorta have been talked about extensively in recent years. Many of the presentations have been concerned with techniques or with survival statistics. This is not our concern today. I wish to talk about the fellow

Frequently vascular lesions raise a serious question of the advisability of surgical attack. Some of these are presented, with a discussion of reasons for and against operation.

who comes into your office for a routine physical examination and you find a lump; or he may come in complaining that he has noticed a lump. It is remarkable how many patients on having an abdominal mass pointed out to them seem vague as to when it originated or deny that they have ever noticed it. Others concede that they were aware of something pulsating in the abdomen but they didn't get alarmed over it because it was painless. They may have been reassured that "as long as it wasn't bothering them, they shouldn't bother it."

It is important to discuss this viewpoint regarding abdominal aortic aneurysms, namely, the notion that they should be treated only if they give rise to serious or disabling symptoms. This laissez-faire attitude has been challenged by the demonstration that if you

* Presented at the annual meeting of the Kansas Medical Society in Kansas City, May, 1962.

let an asymptomatic aneurysm of the abdominal aorta go, in a substantial percentage of patients it will do just that—let go! By this I mean it will rupture, usually within three years, particularly if it is as big as your fist.

Small ones, under 5 cm. in diameter, are much less likely to rupture, and one may find justification for watching them if the patient's general condition is so poor that any operation is very risky. The death rate in operations for removal of abdominal aneurysm varies in the best hands from 5 to 10 per cent depending on the age of the patient and the presence of other evidences of cardiovascular and renal disease. With manifest coronary artery insufficiency, the patient is a poor operative candidate; he is also more likely to die of a cause other than his aneurysm, with either operative or non-operative treatment. In a recent series of patients with abdominal aortic aneurysm in which operation was not advocated by the physician or refused by the patient, there was a one out of three survival after three years in patients with signs and symptoms of other cardiovascular disease. If the aneurysm were the only apparent cardiovascular problem, the survival rate after three years was double this, or two patients out of three.

It is essential to decide whether one has an aneurysm when pulsation in the abdomen suggests this diagnosis. This can usually be done in the office by simple palpation, keeping in mind the possibility that a tumor or other mass may be on the aorta and transmit the pulsation to suggest aneurysm. If the patient is not obese one can usually feel on either side of the aneurysm and estimate not only its presence but fairly accurately its size by actually grasping it. One can seldom tell the proximal extent of the aneurysm but the overwhelming majority lie below the renal arteries so this is not a critical point in physical examination. If one finds the renal arteries involved at operation, this compounds the difficulty and risk of the operation to a striking degree.

There are other points to be assessed by physical examination such as the presence of associated vascular insufficiency in the lower extremities. This could result from arteriosclerosis of the great vessels in the extremity or from emboli originating in the aneurysm. Considering the friable material which one finds in the aneurysm after removal, it is remarkable how uncommonly one gets embolism of this material, even during manipulation at operation. This material is important in another way; it fills up much of the aneurysm so that aortography may show only a smooth channel of approximately normal size through the center of the mass. Plain roentgenograms showing calcification at the periphery of the mass are simpler, safer, and often more helpful than contrast visualization. The chief usefulness of aortog-

raphy lies in the evaluation of vascular insufficiency.

I have recently seen several patients under 65 years of age who developed myocardial infarction immediately after resection of abdominal aneurysms. Presumably the transient hypotension occurring at some time during operation led to the coronary occlusion. This operative complication gives meaning to the statistics previously mentioned on the worsening of prognosis in patients with associated cardiovascular disease. All three of these patients left the hospital after an extended stay for treatment of their infarcts, but the result is not always so fortunate.

If one decides not to recommend operation because the aneurysm is small and the patient has many other problems which may kill him before the aneurysm causes trouble, he should instruct the patient concerning the symptoms and signs of aneurysmal rupture. Rupture is not usually an instantaneously fatal process. One may have hours or days of gradually increasing abdominal distention with pain in the flank or back radiating into the thighs before free rupture into the peritoneal cavity occurs. At times the pain may be so prolonged and indefinite that every diagnosis except aneurysm may be entertained, including psychoneurosis. However, when the diagnosis is assured and the aneurysm is large, one knowingly assumes the risk of an approximately 50 per cent mortality rate should operation be demanded by rupture. Of the patients I have followed on this basis, some have died of heart disease or stroke, which seemed to justify the plan of watchful waiting. I would not want anyone to believe, however, that I advise non-operative therapy for many patients with abdominal aneurysms. The greatest number will be better served by resection and replacement at the hands of an experienced surgeon.

Another acute problem similar to rupture of sacular aneurysm is the dissecting aneurysm. This is often associated with Marfan's syndrome in the long, spindly individual with arachnodactyly and possibly a dislocated lens.

There may be a family history of this—a fellow with that sort of background who gets an excruciating pain between his shoulder blades which within 20 minutes or so runs down his back and up towards his neck, has almost certainly dissected his aorta. His prognosis without prompt, definitive operation is extremely poor.

All dissecting aneurysms do not show up so suddenly and distinctively. There may be vague neurologic symptoms and signs, or peripheral vascular obstruction due to dissection into the femoral vessels. As with many other unusual conditions, diagnosis is not difficult if the possibility is considered.

Before going on to vascular insufficiency, we may comment briefly on one other aspect of lumps, that

is lumps in the neck. These are uncommonly aneurysms and may not even be vascular. The problem may be to rule out a vascular basis for such a cervical lump, whereas in other areas such as the popliteal fossa, the primary diagnosis is often cyst or solid tumor and it is necessary to stress the possibility of aneurysm. Only one point will be made at this time about popliteal aneurysm—it should be treated promptly and aggressively and you should not adopt a wait-and-see attitude.

We considered vascular insufficiency in connection with dissecting aneurysm and now we'll discuss some of its clinical manifestations. Foremost is intermittent claudication, which is pain in the foot, calf or thigh brought on by exercise, usually a fairly standard amount on each occasion. This is relieved by a short period of rest, after which the patient is able to proceed again.

It seems unlikely that this entity could be confused with other things, but I have recently seen such confusion in a man referred for arteriography because of what was thought to be intermittent claudication. He gave a history of pain in the calves and inability to proceed after walking several hundred feet. Examination showed excellent dorsalis pedis pulsations which made vascular insufficiency an unlikely source of his symptoms. I thought he might have a condition in which the pulses are satisfactory at rest but disappear after exercise, but this was not found to be the case. Rather he developed striking muscular weakness after brief exercise, suggesting a form of myotrophy; the working diagnosis was amyotrophic lateral sclerosis. We felt that arteriography was not required and vascular surgery was definitely not indicated.

We come now to conditions which urgently require operative treatment, namely, the acute vascular insufficiencies. These may be due to embolism, thrombosis, trauma, or occasionally tumor. All acute vascular insufficiencies need to be assessed critically by the first person who sees them. For many years it has been maintained that in acute embolism or thrombosis treatment is urgently needed, yet one sees all too frequently patients who have been followed for 12 hours to several days under treatment with so-called vasodilators plus cooling or heating and anticoagulant medication. During all this time the acute vascular insufficiency may be progressing. Occasionally it has ameliorated somewhat after the initial difficulty, so that gangrene does not seem very likely and this is felt to be satisfactory progress under treatment. We must stress the fact that simply saving the extremity is not enough. What we are aiming for is restoration of the circulation to the previous state, and this can most surely and simply be accomplished by operative removal of the cause of blockage. To

reiterate, we are not trying merely to save the limb; our objective is a normally functioning extremity.

One may ask whether it is possible to determine by history the cause of the arterial obstruction and if this modifies the operative approach. There are certain signs such as rapid onset which suggest embolism rather than thrombosis, but the distinction is unimportant from the standpoint of decision to operate, so we will not linger over it. In either case removal of the block can restore a relatively normal circulation, although the prognosis may be better with embolism, which is superimposed on a normal, local vascular system.

We must always think of the source of embolism, since this may be more important than the local situation. A peripheral embolus suggests cardiac or aortic disease and the first sign of a myocardial infarct may be the sudden development of a cold foot in an older individual with no cardiac complaints.

There is a misconception that embolism to the upper extremity is never followed by gangrene. This is simply not so; moreover the victim of acute arterial obstruction in the arm may be more severely handicapped by chronic ischemia of the hand and forearm than by intermittent claudication with arterial block in the leg.

The problems of arterial obstruction may be illustrated by three patients seen within a day preceding this discussion. They represent three separate entities and three age groups, 9, 19, and 59 years. The nine-year-old was seen because of absent pulses in the left foot. She had an open-heart operation several months ago, during which the left femoral artery was used as the conduit for retrograde perfusion from the pump-oxygenator. The opening in the vessel was sutured in the usual way and the presence of a distal pulse was confirmed in the early period after operation. Sometime between one and three months later the vessel occluded, despite which she was able to exercise as freely as before with no subjective distress. In an adult this would scarcely be possible, but in this young girl gradual occlusion has resulted in such excellent collateral circulation that no functional impairment is apparent. She may need operation in the future, but we did not advise it now.

At the other extreme of age is a 59-year-old man, who, for three weeks had signs and symptoms of acute vascular insufficiency in one leg. He is a very poor candidate for elective operation because of massive cardiac enlargement and angina pectoris requiring three or four nitroglycerin tablets daily. At the onset of his arterial occlusion he thought his toes became black but there was no evidence of tissue loss when he was seen yesterday. He is able to walk only 100 feet without dyspnea or angina, so that even if his legs offered no restriction, he would be severely

incapacitated by his basic heart disease. What diagnostic and therapeutic efforts does this man need? Some would say that he should not even be studied. I feel that we should know the nature of his block in the lower extremity so that we could operate accurately to relieve it in the event of incipient gangrene or intolerable rest pain. Mere incapacity for exercise, even if it is severe, is not an indication for surgical therapy in this generally incapacitated patient.

The final patient of the three was seen last night with an old, sad story—he didn't know it was loaded. While cleaning his rifle, it discharged into the middle of his left thigh, the bullet emerging from the lateral aspect. He lost only a modest amount of blood, but the leg was immediately cold and numb below the knee. He came in promptly after 10 p.m. with no pulse palpable below the groin and a cold, numb foot. The sensory loss and vascular insufficiency were improved as compared to the condition immediately after injury and he had evidence of minimal perfusion of the toes which suggested that loss of his foot would not occur with non-operative treatment. The leg by this time was warm nearly to the ankle. Should he be operated on promptly or observed for further improvement? This is a beguiling question, especially with midnight coming on and a meeting in Kansas City the next morning.

This man was an athlete, who needed maximal function in his leg, not mere preservation of a marginal level of circulation. At operation, his femoral artery was found to be nearly transected; his pedal

pulse was promptly restored by excising a small segment and anastomosing the ends by direct suture.

These three patients illustrate various facets of vascular insufficiency. The nine-year-old girl has an obliterated femoral artery but her excellent collateral circulation and full function make operation unnecessary, at least for the present. The 59-year-old man has such severe restrictions due to other cardiovascular disease that a blocked femoral artery demands attention only to save him from amputation or intolerable pain. And the final patient needed prompt restoration of full circulation at the time of injury because nothing less than full circulation will do for a 19-year-old basketball player.

To summarize, with regard to a lump, one needs to decide if it is vascular, and if vascular, is it a normal vessel or an aneurysm? If it is an aneurysm, is it causing the patient enough difficulty now, or will it do so later, so that detailed investigation or operation is demanded?

And with vascular insufficiency one needs to assess the entire individual, as well as his social situation, to decide whether incapacity is enough to warrant assuming the risks, inconvenience and expense of operative correction. It may be possible to narrow the amount of activity to fit the available circulation, rather than to push ahead recklessly as if operative enhancement of circulation were the only way to achieve a favorable adjustment to vascular insufficiency. This is the important area of decision for patient, physician, and surgeon.

NEW RESEARCH PROGRAM

The Life Insurance Medical Research Fund has launched a new \$200,000 program for the education of medical researchers. The program will finance fellowships for medical school students who intend to make medical research and teaching their career after they earn both M.D. and Ph.D. degrees. The \$200,000 allocated to the new program is in addition to more than \$1 million appropriated for research in heart diseases during the coming year.

The 1963-4 academic year will put into full operation a plan begun experimentally a year ago. Then, \$80,000 was committed for the training of five medical researchers. The expanded program will provide for up to six years of postgraduate education leading to an M.D. degree and either a Ph.D. degree or its equivalent, according to Dr. William A. Jeffers, the Fund's scientific director. New appropriations for the program are to be made annually.

Applications for Fund fellowships will be made through the deans of the nearly 100 medical schools in the U. S. and Canada. The students selected for fellowships will ordinarily be in the second year of their medical training and must have "demonstrated unusual scholarship and aptitude for research," according to the Fund's announcement.

The Fund, supported by 133 United States and Canadian life insurance companies, has awarded \$16,235,000 for heart research and medical education since its organization in 1945.

Symptoms Complicating Pregnancy

Treatment of Digestive Disturbances of Pregnancy: Preliminary Report

JOHN V. KING, M.D., *Webster Groves, Missouri*

DIGESTIVE DISTURBANCES are a frequent, if not invariable, accompaniment of pregnancy. This is not surprising, when one considers the profound effect which pregnancy exerts upon the form and function of the gastrointestinal tract, the hormone balance and the habitus of a gravid female. Mechanical changes include compression of the liver and displacement of stomach and intestine. As has been pointed out,¹ beginning with conception, hormonal changes occur, working primarily for the safe development and delivery of the child. These result, among many other effects, in an increased basal metabolism, incomplete fatty acid breakdown, liver changes, and other alterations which affect the physiology of the gastrointestinal tract. Blood flow patterns also have changed, with increasing divergence of arterial blood to the uterus and impeding of the venous return. Evidence of these mechanical, hormonal and metabolic alterations, all of which influence digestion, is demonstrated by the frequent occurrence of heartburn, flatulence, distention, nausea and vomiting—which, in some early cases, progresses in severity to hyperemesis gravidarum.

The purpose of this preliminary study was to determine, in a small series of cases in office practice, whether a medication* containing digestive enzymes to supplement possibly inadequate natural secretions, together with an antispasmodic (homatropine methylbromide) and a cholecystokinetic and antiketogenic agent (d-sorbitol) would relieve symptoms of digestive disturbances which commonly occur during pregnancy.

Materials and Methods

The medication used is a liquid digestant preparation containing per 5 ml. teaspoonful 10 mg. standardized proteolytic enzyme, 80 mg. standardized amylolytic enzyme, 4.4 Gm. d-sorbitol, and 2.5 mg. homatropine methylbromide. To test its efficacy in relieving functional digestive disorders in pregnancy, the liquid was administered to a group of 40 patients, 27 of whom were in the third trimester, 13 in

the first trimester of pregnancy. Patients ranged in age from 19 to 42 years, the average age being 30. Both primiparas and multiparas were included in the series. Patients generally complained that symptoms were produced by foods of all classes (protein, carbohydrate, fat), with fats causing most of the individual digestive disturbances. Gastrointestinal symptoms in the 40 patients were distributed as follows: belch-

Gastrointestinal distress can be relieved in a majority of first and third trimester pregnancies by a combination of digestive enzymes, d-sorbitol and homatropine methylbromide.

ing, 80 per cent; gaseous distention, 65 per cent; flatulence, 42.5 per cent; nausea, 42.5 per cent; heartburn, 40 per cent; vomiting, 20 per cent; pain or generalized abdominal discomfort, 17.5 per cent (*Table I*). Constipation was not assessed in this series, but mild cathartics were used as needed.

Method of Administration

Administration of the liquid was carried out for ten days to two weeks in each case, some patients being continued on the medication after the trial period. Dosage, generally, for those in the third trimester was one teaspoonful three times daily, immediately after meals. In one patient the dosage after the evening meal was increased to two teaspoonfuls. In several cases, after the first few days, it was possible to taper off to one teaspoonful p.r.n. Patients in the first trimester received one teaspoonful three times daily before meals, plus one teaspoonful at bedtime. In two of these patients, dosage was increased to two teaspoonfuls on the same schedule.

Results

All patients in the third trimester showed significant, significant to moderate, or moderate improvement. The medication proved most valuable in elimination of flatulence, belching and gaseous distention. Heartburn and nausea were lessened, but not com-

* Converzime® Liquid, supplied by B. F. Ascher & Co., Inc., Kansas City, Mo.

TABLE I
SYMPTOMS OF GASTROINTESTINAL DISTURBANCES REPORTED BY PATIENTS

<i>Symptoms</i>	<i>Patients Presenting Symptoms</i>					
	THIRD TRIMESTER		FIRST TRIMESTER		TOTAL PATIENTS	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Belching	23	85.0	9	69.0	32	80.0
Distention	19	71.0	7	54.0	26	65.0
Flatulence	16	59.0	1	8.0	17	42.5
Heartburn	15	55.5	1	8.0	16	40.0
Nausea	4	14.8	13	100.0	17	42.5
Frequent Vomiting			8	61.5	8	20.0
Pain and/or general abdominal discomfort	7	25.9			7	17.5

pletely overcome in all cases. Generally, in those cases showing best results, response to the medication was prompt, many patients obtaining relief of symptoms after the first few doses. Some patients were then able to taper off to dosage p.r.n., while in others reduction of dosage led to return of some of the symptoms. One 32-year-old patient who suffered from flatulence, belching, distention and nausea also showed anxiety. It is worthy of note that the marked improvement in her digestive function brought about by the medication changed her outlook about her pregnancy and life in general for the better.

In only four of the 27 third-trimester patients was other medication given concurrently:

A 26-year-old patient suffering from flatulence, belching, distention and heartburn after eating any type of food (fats, starches, proteins) also manifested nervousness and anxiety and had been given a mild sedative. Her gastrointestinal symptoms showed noticeable improvement with the addition of the digestant liquid.

A 27-year-old patient in whom all types of food caused gas and heartburn improved moderately with the medication; an antacid was added to her regimen after one week, with excellent total relief of symptoms.

A 22-year-old patient with mild anxiety (it was her second pregnancy in two years) complained of belching and heartburn after eating any type of food. The medication afforded moderate relief; after one week an antacid was added and a better result obtained.

A 35-year-old obese patient, in whom possible organic gallbladder dysfunction was suspected (cholelithiasis confirmed postpartum by x-ray) suffered from nausea, belching, distention and diffuse abdomi-

nal cramps after eating any kind of food. She had been on a salt-free diet and given diuretics for low reserve kidney syndrome and sedatives for the indigestion. Improvement of her gastrointestinal symptoms followed the addition of the liquid digestant.

Among the 13 patients in the first trimester, all complained of nausea; eight of vomiting; nine of belching; seven of distention; one of flatulence; one of heartburn. Following administration of the digestant liquid, nine of these patients reported moderate improvement; one slight improvement; one moderate improvement of gas and bloating but no improvement of "morning sickness." Two patients reported no improvement. In this group, improvement of digestion and relief of belching and gaseous distention were the most notable effects of the medication. It proved of some help also in the milder cases of nausea with only occasional vomiting, but was ineffective in severe nausea and vomiting.

No patient in either the first or the third trimester was made worse by the medication, and no untoward effects of any kind were reported or observed. It is also to be noted that in all cases dietary restrictions were lifted with improvement of symptoms and remained minimal in most cases with medication only necessary at infrequent p.r.n. demand. Results of administration of the digestant liquid are summarized in *Table II*.

Discussion

Only patients with moderate to greatly annoying symptoms were selected for treatment with the digestant liquid in this series. A prominent feature of the series was the presence of excessive amounts of gas in the alimentary tract, manifested by the complaints of belching in 32 patients (80 per cent), dis-

TABLE II
RESULTS OF TREATMENT WITH CONVERZYME LIQUID

<i>Degree of Improvement</i>	<i>Third Trimester</i>		<i>First Trimester</i>		<i>Total Patients</i>	
	NUMBER	PER CENT	NUMBER	PER CENT	NUMBER	PER CENT
Marked	11	40.7			11	27.5
Marked to Moderate	14	51.8			14	35.0
Moderate	2	7.5	9	69.0	11	27.5
Moderate to None*			1	7.7	1	2.5
Slight			1	7.7	1	2.5
None			2	15.6	2	5.0

* This patient reported less gas and bloating after therapy but not much help on "morning sickness."

tention in 26 (65 per cent), and flatulence in 17 (42.5 per cent). Belching and distention were frequent in both the first and third trimesters; flatulence was common in the third trimester, but occurred in only one patient in the first trimester. Heartburn, likewise, was frequent in the third trimester, 15 of the 27 patients (55.5 per cent) presenting this symptom, whereas only one of the 13 patients in the first trimester complained of heartburn. Seven patients in the third trimester complained of generalized abdominal discomfort, in most cases due to increased pressure of the enlarging uterus, although one patient with possible organic gallbladder dysfunction described diffuse abdominal cramps which occurred after eating. Symptoms of pressure and pain were not present in patients in the first trimester. All patients in the first trimester complained of nausea, eight of the 13 also of vomiting. In the third trimester nausea was rare, reported by only four of the 27 patients, and in none of these was there vomiting.

Formation of excessive gas, indicative of improper or incomplete digestion of food, particularly attends abnormal fermentation of carbohydrates. In the absence of adequate natural secretions for the normal hydrolysis of starch, digestion and absorption of protein and fat may also be adversely affected.² It has been demonstrated³ that when starch digestion is improved, utilization of fat and protein is also increased. Likewise, since the amylolytic, proteolytic and lipolytic enzyme systems are mutually interdependent,² the action of each appearing to enhance the effectiveness of the others, lack of sufficient proteolytic enzyme for complete digestion of proteins may have an unfavorable effect upon the digestion of other foods. Administration of starch- and protein-digesting enzymes is therefore logical therapy.

Biliary disorders frequently cause incomplete or

faulty digestion of fats, also producing symptoms of gaseous eructation and distention and, in some cases, nausea, pain in the gallbladder area, and constipation. The high incidence of biliary stasis during the latter half of pregnancy has been noted,⁴ and good results were obtained in such patients who received a combination of d-sorbitol and homatropine methylbromide, the former acting as a cholagogue, the latter causing relaxation of the sphincter of Oddi and dilation of the bile ducts. Sorbitol and homatropine methylbromide also proved effective in 52 non-pregnant patients (both men and women) with symptoms of biliary dyskinesia, chronic non-calculous cholecystitis, and post-cholecystectomy syndrome.⁵ Similar good results were seen in a series of 124 patients with cholelithiasis, cholecystitis and liver disease who received sorbitol combined with homatropine methylbromide.⁶ That symptoms of digestive disturbances following ingestion of fatty foods were relieved in the present series of pregnant patients by a digestant liquid containing sorbitol and homatropine methylbromide confirms these findings.

Carbohydrate starvation and dehydration with ketosis are believed by some⁷ to be factors producing pernicious vomiting of pregnancy, ordinary morning sickness being a minor form of this condition. It is postulated that liver glycogen supplies are lowered by demands of the fetus, and, after night-long fasting, carbohydrate reserves are further reduced, with resulting mild ketosis that leads to nausea and vomiting. Animal experiments^{8, 9} have shown sorbitol to be antiketogenic in rats. It is interesting to note that a French investigator,¹⁰ reporting on a small series of ten cases, found sorbitol to be effective in controlling both mild and severe nausea and vomiting of pregnancy. In the present study, however, these findings were not confirmed, since the sorbitol-containing prep-

aration administered proved of little help in severe nausea and vomiting of pregnancy.

The opinion has been expressed¹¹ that delayed gastric emptying may be responsible for the common complaint of heartburn in pregnancy. Other suggested causes, such as alterations in gastric acidity, reflux of gastric contents into the esophagus, peptic ulcer, or hiatus hernia have been mentioned¹² in seeking to account for the prevalence of this symptom, said to occur in approximately 60 per cent of pregnant women. In the present series, heartburn occurred chiefly in the third trimester, 55.5 per cent of the 27 patients complaining of this symptom, which was relieved somewhat by the digestant liquid used alone and well when a non-absorbable antacid was given in conjunction with it.

Summary and Conclusions

A liquid containing digestive enzymes, d-sorbitol and homatropine methylbromide was administered to 27 patients in the third trimester and 13 patients in the first trimester of pregnancy, all of whom complained of gastrointestinal disturbances.

This medication is a valuable adjunct in treating late (third trimester) functional digestive disturbances of pregnancy, especially in relieving gaseous distention, gas pains, bloating and nausea. Hyperacidity and heartburn are less well relieved, but are helped somewhat.

In early (first trimester) digestive upsets with little or no vomiting, the medication is helpful but was least effective in its anti-nausea and anti-emetic properties.

References

1. Pope, C. E.: The Profound Effect of Pregnancy on the Gastrointestinal Tract. *Postgraduate Med.* 16:58-72, 1954.
2. Necheles, H., and Kirsch, M. M.: *The Physiological Basis of Gastrointestinal Therapy*. New York, Grune & Stratton, 1957, p. 123.
3. Beazell, J. M., Schmidt, C. R., and Ivy, A. C.: The Diagnosis and Treatment of Achylia Pancreatica. *J.A.M.A.* 116:2735, 1941.
4. Muscillo, C. G., and Giorlando, S. W.: Treatment of Biliary Stasis in the Latter Half of Pregnancy. *Am. J. Obst. & Gynec.* 80:545-547, 1960.
5. Weiner, H. H.: Treatment of Biliary-Digestive Malfunction. *Clin. Med.* 8:87-90, 1961.
6. Riese, J. A.: Nonsurgical Treatment of Cholelithiasis, with Observations on Cholecystitis and Liver Disease. *Am. J. Gastroenterology* 36:683-691, 1961.
7. Best, C. H., and Taylor, N. B.: *The Physiological Basis of Medical Practice*, ed. 7. Baltimore, The Williams & Wilkins Company, 1961, p. 702.
8. Edson, N. L.: Ketogenesis-Antiketogenesis. IV. Substrate Competition in Liver. *Biochem. J.* 30:1862-1869, 1936.
9. Todd, C. M.: The Antiketogenic Action of Sorbitol in Rats. *Austr. J. Exp. Biol. Med. Sc.* 32:827, 1954.
10. Moreau, R.: A Simple Treatment of Habitual Vomiting of Pregnancy by Sorbitol. *Gaz. med. France* 67:2172-2174, 1960.
11. Hunt, J. N., and Murray, F. A.: Gastric Function in Pregnancy. *J. Obst. & Gynaec. Brit. Emp.* 65:78-83, 1958.
12. Quinlan, D. K.: Heartburn in Pregnancy. *S. Afr. Med. J.* 35:628-630, 1961.

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4. Doe, J. E., What I Know About It, *J. Kans. M. S.*
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Industrial Poisons

Toxic Reaction Following Inhalation of Fumes of RP-I Missile Fluid

WILLIAM NICE, M.D., Topeka

THIS PATIENT HAD an unusual toxic reaction following inhalation of fumes of RP-I missile fluid, therefore it is felt this case is worth reporting.

A. P., a 57-year-old white, male mechanic, was brought to the hospital emergency room on September 21, at 2:30 p.m., with the history that he had been working on a missile fuel tank over an open vent and was inhaling fumes. The RP-I fuel had been removed, however the fumes were still in the tank. He first noticed nausea then became short of breath and developed severe chest pain which radiated down his left arm. Within a short time he developed severe cold moist perspiration, then vomited, but continued to work. He estimated he worked in the fumes for approximately 20 to 25 minutes. He climbed down off the tank, started home but collapsed before he reached his house. He was brought to the hospital and admission was advised. He stated he was completely well before this episode.

Past History

He had measles, mumps, whooping cough, chicken pox and typhoid fever as a child, pneumonia at age 14 and age 29 years. He had indigestion in November, 1954, and had an upper gastrointestinal series at that time; however, no ulcers were found. In 1954 he was examined at the office and was found to have albuminuria, red cells and casts in his urine, which cleared within a short time. He also had an allergic reaction to a tetanus shot in 1952. He had mild joint pain in his shoulders and wrists in 1957.

Physical examination on admission to the hospital revealed a white male in severe respiratory distress with severe chest pain. The eyes revealed a slight divergence at times although he could see equally well with both eyes. The nose and throat were essentially negative except for a slight mucoid discharge. The chest revealed bilateral equal excursions, and there were occasional rhonchi noted but no fine moist rales. His blood pressure on admission was 180/110, his heart was regular and no organic murmurs were noted, however the tones were a little distant. (Previous blood pressure readings at the office were 130/80 to 145/80.) There was marked tenderness in the epigastric area. The liver and spleen

were not palpable on admission. There were several scars of infection on pretibial area.

On admission the patient stated that the tank he was working on was a liquid nitrogen tank and it was felt that he had acute nitrogen poisoning with possibly a coronary occlusion.

After careful research by the librarian at the Stormont Medical Library, as well as written and personal communications, I have been unable to find this disease reported in any medical literature. Apparently this is the first time it has been reported.

Laboratory Data on Admission

The electrocardiogram on the day of admission revealed elevated ST segments in leads II, III, AVF, V5, and V6. There was slight depression of the ST segments in V2, V3 and V4. The T waves were inverted in AVR, flat in AVL with some peaking of the T waves in V leads. It was felt that this suggested anoxia compatible with myocardial anoxia but not diagnostic of coronary occlusion. Electrocardiogram repeated September 22 revealed the ST segments had returned to normal, however the T waves were inverted in leads I, AVL, AVR, V5 and V6. The QRS segments were notched and slurred in several leads. There were slight Q waves in leads III, AVF and V5.

CBC was essentially normal with 93 per cent hemoglobin; 46 per cent microhematocrit; 10,400 WBC; with 68 polymorphonuclear leucocytes; 2 stabs, 1 juvenile, 26 lymphocytes, 2 monocytes and 1 eosinophile.

The SGOT on September 21 was 30 units; however, the next morning the SGOT was 174 units. SGOT on September 25 was 17 units. The methemoglobin on the day after admission was 2.3 per cent. Blood urea nitrogen on the day of admission was 16.5 mg per cent; blood sugar was 113 mg per cent; CO₂ on the morning after admission was 46.6 volumes per cent or 21 mEq per liter. Routine urinalysis on

admission revealed a trace of albumin with full field of pus cells, sugar and acetone were negative, color straw, sediment 2+, reaction 5.0, specific gravity 1.033. The platelet count on September 25 was 34,400, the platelets were large and greatly decreased in number. Repeat methemoglobin on September 25 was 1.2 per cent; sedimentation rate on September 26 was 31 millimeters in 30 minutes; 83 millimeters in 60 minutes. Repeat methemoglobin on September 26 was 2.3 per cent. A repeat urinalysis on September 27 revealed 3+ albumin, 10-15 WBC, 3-5 RBC, with showers of casts, color yellow, sediment plus, reaction 4.5, specific gravity 1.015, sugar and acetone were negative. The bilirubin on September 27 direct 0.1 mg per cent; indirect 0.3 mg per cent; total 0.4 mg per cent. The blood urea nitrogen on September 26 was 66 mg per cent; and the creatine 2.2 mg per cent. On September 27 the blood urea nitrogen was 99 mg per cent; creatine 3.4 mg per cent, the serum sodium was 132 mEq per liter, and the serum calcium was 4.8 mEq per liter. On September 28 repeat blood urea nitrogen was 120 mg per cent, CO_2 51.5 volumes per cent; serum chlorides 93 mEq per liter. On September 28 repeat blood count was essentially normal except for platelets which were 73,100. The cephalin flocculation on September 27 at 24 hours 3+; 48 hours 3+. On September 30 the blood urea nitrogen was 141 mg per cent, and the creatine 4.4 mg per cent. On October 1 the blood urea nitrogen was 120 mg per cent and creatine 90.8 mEq per liter. On October 1 the serum sodium was 140 mEq per liter and the serum potassium 5.2 mEq per liter. By October 4 the blood count was still normal, however the platelet count was 207,000. On October 4 the methemoglobin was negative, the blood urea nitrogen was 46 mg per cent, and the CO_2 was 47.9 volumes per cent or 21.7 mEq per liter. On October 13 the blood urea nitrogen had dropped to 21 mg per cent. The urinalysis on October 17 revealed color straw, sediment trace, reaction 7.5, specific gravity 1.013, trace of albumin, sugar and acetone were negative; WBC 8-10, RBC 175-200. The serum bilirubin on October 18 was direct 0.1 mg per cent; indirect 0.2 mg per cent; total 0.3 mg per cent. The serum albumin on October 18 was 4.0 mg per cent; globulin 2.3 grams per cent with a total 6.3 grams per cent. The blood urea nitrogen on October 20 was 15 mg per cent. The cephalin flocculation on October 20 was negative at 24 and 48 hours.

Hospital Course

His blood pressure was down to normal within 48 hours after admission; however, he continued to have chest pain and pain in both arms. On September 25 he had severe joint pain in his shoulders, elbows,

hand and finger joints and pain in his right knee. The same evening he developed temporomandibular pain which was worse on opening and closing his mouth. There was no redness or swelling in any affected joints at that time. On September 26 the pain in his right knee was improved, although he had pain in his left knee. By September 28 the pain was much less in all joints, however his BUN had risen to 120 mg per cent, his face was puffy, he had blurred vision and was a little irrational at times. On September 30, his face was not as puffy, his joint pain was less, however his BUN was 140 mg per cent. He was still somewhat hazy mentally, but he knew he was in the hospital. On October 1 his BUN was down to 120 mg per cent, he felt much improved and was clearing mentally. After that he improved rapidly and was allowed to the bathroom in a wheel chair by October 14. The x-ray films of the bones revealed an old fracture of the right carpal lunate otherwise the joints were normal. The chest x-ray films on September 26, revealed scattered supradiaphragmatic areas of discoid atelectasis, probably more extensive in the left supradiaphragmatic area. A repeat chest x-ray film on October 17 revealed striking improvement with minimal fibrotic residues in the basilar segments with no change suggesting active disease. He was discharged from the hospital on October 22 still very weak and dyspneic on slight exertion. He has been examined several times since discharge and continues to improve but he still gets short of breath and has some substernal pressure if he walks fast and still has tenderness over the liver area.

Summary

This patient had a severe toxic disease following inhalation of fumes of RP-I missile fluid. He developed myocardial anoxia, elevated BUN with marked decrease in renal function, pulmonary fibrosis, decreased platelet count, methemoglobinemia, and 3+ cephalin flocculation.

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Regional Anesthesia Improved

Pudendal Nerve Blocks: Use of Carbocaine® in 256 Patients*

ARNOLD H. BAUM, M.D., *Dodge City*

Introduction

REGIONAL ANESTHESIA of the perineum for childbirth by blocking the pudendal nerve and its branches has many advantages over inhalation and spinal anesthesia. It is especially appropriate for the patient who has had a normal pregnancy and from whom an uncomplicated delivery can be expected. Pudendal nerve block is safe, simple to perform and carries no particular hazard for the mother or fetus. In our experience lidocaine has provided good regional anesthesia, but recently a newer agent, Carbocaine, was introduced and reports of its use in obstetrics are encouraging.^{1, 2}

Carbocaine, a potent local anesthetic, has been widely used in this country and Europe for several years. Pharmacologic tests show it to be considerably more potent than procaine and slightly more potent than lidocaine.^{3, 4} It has excellent tissue compatibility and has been well tolerated in animal and clinical studies.³⁻⁵ Clinical experience with infiltration, regional block, caudal and epidural anesthesia indicates that Carbocaine has a short latent period, provides anesthesia of adequate depth and duration and does not require a vasoconstrictor to prolong its action.^{1, 2, 4-6}

Technique

With the patient in the lithotomy position, shaved, draped and prepared aseptically, an intradermal wheal is raised on the skin slightly medial to and overlying the ischial tuberosity on the right and left sides. A three or four inch needle (22-gage) is inserted through the wheal perpendicular to the skin. The needle is slowly advanced, guided by an index finger in the rectum, to the tuberosity for about one inch. About 5 ml. of the anesthetic solution is deposited around the side and under the tuberosity to anesthetize the inferior pudendal nerve. As the needle is withdrawn, another 5 ml. are deposited to reach the perineal branches of the small sciatic nerves. The pudendal nerves innervate the perineal skin, perianal

skin, most of the labia majora, perineal muscles and clitoris.

Spreading power tissue tolerance and prolonged effect without epinephrine provide Carbocaine with advantages over other local anesthetic agents.

Method

The effectiveness of lidocaine and Carbocaine for pudendal block was compared in 31 women. A 2 per cent solution of lidocaine with epinephrine was injected into one side and a 2 per cent Carbocaine solution without a vasoconstrictor into the opposite side of the same patient. Onset of analgesia was tested by pinching and needle-pricking the perineal area on each side. The right and left sides were injected alternately with each agent so there would be no bias. Results are shown in *Table I*. Onset of anesthesia was rapid with both agents but Carbocaine was rather faster than lidocaine. In spite of the addition of epinephrine, pudendal blocks on the side injected with lidocaine did not last as long, on the average, as those with Carbocaine. Both drugs gave anesthesia of adequate depth and duration for delivery and episiotomy; blocks were considered excellent in 77.4 per cent of patients and good in 22.6 per cent. There were no incomplete nerve blocks or failures of anesthesia.

It was then decided to use Carbocaine for all pudendal blocks. At first a 1 per cent solution was used as recommended by Sadove,² but the 2 per cent solution was found superior. *Table I* compares results with each concentration. Neither solution contained epinephrine and the total dose was the same; 10 ml. were injected into each side. A 1 per cent solution was used in 75 women; the strength was increased to 2 per cent and we have now given 2 per cent Carbocaine to 150 patients in addition to those who also received lidocaine in one side.

The 1 per cent solution acted rapidly (5-10 min-

* Carbocaine, brand of mepivacaine, Winthrop Laboratories, New York, N. Y.

TABLE I

Anesthetic	Amt.	No. of Patients	Average Onset Time	Duration	Adequacy of Anesthesia		
					EXCELLENT	GOOD	INCOMPLETE
2% lidocaine with epinephrine (one side)	10 ml.	31	7-15 min.	45- 90 min.	24 (77.4%)	7 (22.6%)	0
2% Carbocaine (opposite side)	10 ml.		3-10 min.	45-120 min.			
1% Carbocaine	10 ml.	75	5-10 min.	40- 55 min.	52 (69.3%)	23 (30.6%)	0
2% Carbocaine	10 ml.	150	2-10 min.	45-150 min.	136 (90.7%)	14 (9.3%)	0

utes) but not as quickly as 2 per cent which had extremely fast action; anesthesia was definitely complete in two minutes in some patients and was never longer than 10 minutes. The stronger solution had much longer action, up to 2½ hours compared to a maximum of 55 minutes with 1 per cent Carbocaine. It is possible that larger amounts of 1 per cent Carbocaine may have been as effective as 2 per cent. The percentage of excellent and good nerve blocks give some indication of the relative potency of the two concentrations. An excellent block was obtained in 90.7 per cent with 2 per cent Carbocaine and in 69.3 per cent with a 1 per cent solution. There were no failures or incomplete nerve blocks with either 1 per cent or 2 per cent Carbocaine.

The areas supplied by the pudendal nerve and its branches were well covered due to Carbocaine's superior spreading power. Relaxation of perineal muscles was satisfactory in all patients. Tissue tolerance was excellent. Even without a vasoconstrictor, there was no increase in bleeding with Carbocaine, compared to other local anesthetics. No patient showed a significant increase or decrease in blood pressure during the procedure. Perineal repair was performed without the injection of additional amounts of Carbocaine.

Carbocaine has one important advantage over other local agents for obstetrical analgesia; it does not require epinephrine to delay absorption and prolong anesthesia. The hazards of epinephrine have been pointed out in a recent review.¹ Sadove goes as far as to say that epinephrine is contraindicated for regional anesthesia during childbirth, since it may constrict the vessels supplying oxygen to the placenta and thus endanger the fetus. Epinephrine may also slow the rate of uterine contractions and can possibly be harmful to the mother's circulatory system.

Summary

1. Pudendal nerve blocks were performed in 225 women with 1 per cent or 2 per cent Carbocaine without epinephrine.

2. Carbocaine was a highly satisfactory local anes-

thetic; the 2 per cent solution was definitely superior in onset time and depth and duration of anesthesia.

3. A 2 per cent Carbocaine solution provided better anesthesia than 2 per cent lidocaine with epinephrine when tested concomitantly in opposite sides of 31 women.

4. There were no reactions to any anesthetic agent used.

References

1. Kobak, A. J., and Sadove, M. S.: Combined paracervical and pudendal nerve blocks; a simple form of transvaginal regional anesthesia, *Am. J. Obst. & Gynec.* 81:72, Jan., 1961.
2. Sadove, M. S.; Kobak, A. J., and Morch, E. T.: Regional anesthesia in obstetrics, *M. Clin. North America* 45:173, Jan., 1961.
3. Luduena, F. P.; Hoppe, J. O.; Coulston, F., and Drobeck, H. P.: The pharmacology and toxicology of mepivacaine, a new local anesthetic, *Toxicol. & Appl. Pharmacol.* 2:295, May, 1960.
4. Gordon, R. A.; Kerr, J. H., and Taylor, R.: A laboratory and clinical evaluation of mepivacaine (Carbocaine), *Canad. Anaesth. Soc. J.* 7:290, July, 1960.
5. Knox, P. R.; North, W. C., and Stephen, C. R.: Pharmacologic and clinical observations with mepivacaine, *Anesthesiology* 22:987, Nov.-Dec., 1961.
6. Lichtman, A. L.: Minor surgical procedures with mepivacaine for local anesthesia, *Clin. Med.* 8:1329, July, 1961.

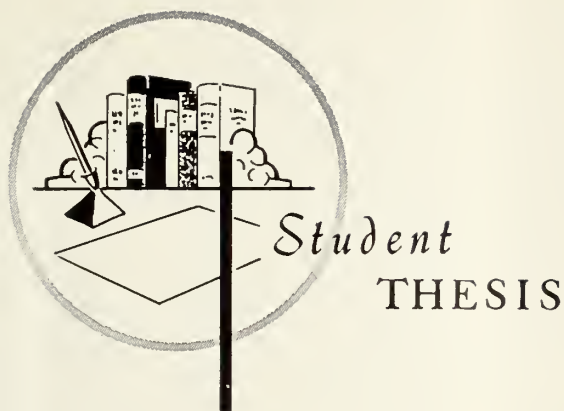
There is nobody so irritating as somebody with less intelligence and more sense than we have.—*Don Herold*

There are several ways in which to apportion the family income, all of them unsatisfactory.—*Robert Benchley*

The difference between existence and life is the intelligent use of leisure.—*Rev. Herman S. Hughs*

We are all born for love; it is the principle of existence and its only end.—*Benjamin Disraeli*

To be ignorant of the past is to remain a child.
—*Cicero*



Myasthenia Gravis and Auto-Immunity

THOMAS A. WILLIAMS, M.D.,* *Kansas City, Missouri*

Introduction

IN THE PAST FIVE YEARS the volume of published literature about myasthenia gravis has almost equaled that volume previous to five years ago, and a patient population of several thousand has been accumulated. The medical student, when first introduced to the illness, may succumb to the impression that this is a straight-forward disease with known mechanism for which easily prescribed medicine can be dispensed with great success. But further exposure is disillusioning and he realizes that it is difficult to treat and about it there are many unanswered questions. In fact, the more he learns about the disease, the less for sure he feels he knows.

Once considered a rare disease, the incidence today, although not known, of diagnosed and undiagnosed cases has been estimated by Tether as high as one in 30,000 population in the United States. However, a more widely accepted figure of 30,000 total myasthenia gravis victims is proposed by Needham of the Statistical Study Department of Eli Lilly Company.

Much has been accomplished in the therapy of the condition, but failure to respond or response and subsequent failure to the agents now at our disposal is well known.

Many patients do not obtain complete relief; others may develop myasthenic or cholinergic crisis. A

very few do not respond to any medication, whereas others may have spontaneous remission or have a cyclic character to their illness.

History of Etiological Considerations

In 1672, Thomas Willis first introduced the myasthenia gravis syndrome, without naming it, of asthenia with work relieved by rest, to English literature in his latin "De anima brutorum." It is interesting to note his terminology:

"Wherefore, when the spirits inhabiting the Brain, are conscious of the debility of others disposed in the Members, they themselves refuse local motions, for that it would be too difficult a task to impose of their companions; wherefore, the sick are scarce brought by any persuasion, to try whether they can go or not; nevertheless, those labouring with a want of Spirits, who will exercise local motions as well as they can in the morning are able to walk firmly and fling about their arms hither and thither, or to take up any heavy thing; before noon the stock of the Spirits being spent, which had flowed into the Muscles, they are scarce able to move Hand or Foot."

It is in part interesting in that it happens by chance to contain a crude description of one of the newer and more soundly supported theories of the mechanism of myasthenia gravis. That is, the deficiency of acetylcholine production theory which postulates a deficiency of "Spirits" sent to muscle from the nervous system.

The next mention of the syndrome was not made until 1877 by Wilks. But, Erb in 1879 was the first to give a full account of the syndrome. Oppenheim in 1887 was the first to note the similarity of my-

* This is one of a group of theses written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be best by the faculty at the school. Dr. Williams is now serving internship at St. Luke's Hospital, Kansas City, Missouri.

asthenia gravis to curare poisoning. Goldflam in 1893 contributed an excellent paper establishing almost all of the major clinical features known today. So impressive were the contributions of Erb and Goldflam that the disease was called the Erb-Goldflam Syndrome until 1895 when Jolly coined the phrase Myasthenia Gravis pseudo-paralytica, meaning: severely weakened muscles without anatomico-pathological findings. Jolly even suggested using physostigmine in therapy but apparently never tried it. He probably thought of eserine because: (1) it was known at the time that in small doses it increases skeletal muscle contractility in normal people and (2) the pharmacological properties were described in 1876 as those of the alkaloid of the calabar bean.

Almost all of the literature in the 19th century was concerned with clinical description and the year 1900 witnessed a great outpouring of literature reviewed by Campbell and Bramwell, DeBuck and Broenchant, who counted a total of 91 reported cases since 1877. As a result of these works, myasthenia gravis became widely known in England and America although it remained relegated to the back pages of medical texts. In 1904, Elliot proposed without experimental evidence that neuromuscular transmission might be mediated by a chemical substance released by nerves. In 1934, Mary Walker, a London medicine resident, reported in *Lancet* a case of myasthenia gravis treated with eserine. Walker was led to pass this major milestone probably because it was known by 1921 that acetylcholine had a neuromuscular transmission action and was hydrolyzed in tissue to inactivity and that this hydrolysis could be blocked by physostigmine and that physostigmine diminished the symptoms of curare poisoning and that there was a similarity between curare poisoning and myasthenia gravis.

However, it wasn't until 1936 that Dale conclusively demonstrated the action of acetylcholine. Nevin is credited with introducing the idea of a circulating defective metabolite as the cause of the disease, but Walker in 1938 reported the first experiment dealing with this idea. She noted increased extraocular weakness in a myasthenic following release of a tourniquet around an exercised arm (the Walker effect). Ischemic muscle may release many substances which might further weaken an already embarrassed neuromuscular transmission in the myasthenic and account for Walker's clinical observation. Therefore, her observation is not conclusive evidence of a circulating agent in myasthenia gravis but it did stimulate further investigation. Wilson and Stoner (1944) found a significant block in nerve muscle preparations bathed in myasthenia gravis serums after exercise but not before exercise or in normal controls. Struppler (1955) demonstrated paralysis in many small animals using the serum after exercise. Nastuk and Lammers were unable to corroborate the above evidence. But, Nas-

tuk's series was small and Lammers did not apparently take into account the effects of time or volume. Windsor obtained 10 out of 11 post-exercise myasthenia gravis serums which showed significantly greater reduction of contraction of gastrocnemius from serum infected frogs than nine post-exercise control serums from normal individuals. Nastuk tried a larger series in 1959 without demonstrating a significant blocking effect but not all of his sera were post-exercise. These blocks differ from curare blocks in that lysis of muscle cells is always present and the block is not reversed by neostigmine in the former.

Although there are many possible artifacts in the tests above, it appears that hypoxia is a factor in the weakness produced. If it is, the interpretations of the fact are myriad. A more delicate and specific test is needed since the above methods of bioassay will not detect curare in the serum of an animal fully paralyzed by the drug. Large quantities of blood have been transfused from normals to myasthenics and vice versa without changes of strength in either but of course the postulated circulating factor may only circulate for a short time yet precipitate long range effects. These efforts have been made to find a circulating factor since 1938 when Walker took the first step. It has not yet been found. The existence of transient neonatal myasthenia to be discussed later is better evidence for a circulating factor than the above bioassays.

Aeschlimann in 1931 had synthesized prostigmine as one of the analogues of physostigmine and found that it also diminished the weakness in curare poisoning in experimental animals. Remens in 1932 found that prostigmine greatly helped myasthenic weakness but did not realize its value because he failed to use an atropine adjunct. The search for a drug with fewer than the many troublesome cholinergic side effects of physostigmine has led to the successful trial of prostigmine with atropine to block its muscarinic side effects. This was first done in 1935 by Walker. In 1952, edrophonium, an anticholinesterase analogue of prostigmine was introduced as a rapid diagnostic test to differentiate cholinergic from myasthenic crisis. This has proved to be a very valuable function. In 1954, pyridostigmine (Mestinon®, Roche) and in 1955 ambenonium (Mytelase) were introduced into the therapeutic arsenal and now Prostigmin®, (Roche) Mestinon and Mytelase are the primary drugs of myasthenia gravis therapy. They are all anticholinesterases but the latter two have longer durations of action and fewer cholinergic side effects. Polymethylene side chains have been added to the Prostigmin and Mestinon to give a much longer duration of action but these drugs have not yet been adequately evaluated.

Thymectomy was first reported in 1941 at Johns Hopkins by Blalock as a therapy for myasthenia gravis. Blalock's results were very encouraging but

the accumulated experience of several other surgeons has shown that this procedure is probably not indicated except in a minority of patients. The procedure was attempted because of the high incidence of thymomas and thymic hyperplasia in myasthenia gravis. The value of irradiation of the thymus has not been demonstrated. Carotid sinus denervation was first attempted by Leger in 1943 but Thevenard in 1953 gave the procedure its impetus as a treatment of the illness. He did so because the operation had recently been reported as beneficial to myasthenics. Also, experimental data shows that the carotid sinus has a regulatory effect on somatic activity and muscular tone in addition to its vasomotor and respiratory effects. Thevenard reports improvement in 60 per cent of his cases but the procedure has hardly been evaluated thoroughly enough to establish its usefulness. In evaluating surgical results it should be noted that any form of surgery may possibly induce remissions in some patients through a stress mechanism.

There are anatomico-pathological findings in myasthenia gravis. Weigert in 1901 reported lymphorhages in skeletal muscle in myasthenics. This finding has been repeatedly confirmed and is thought to be present in 50 per cent of myasthenics but has no relationship to the severity of the disease or clinically involved muscle groups. They are also found in the adrenals, pancreas, and myocardium in myasthenics. Clinically evident muscular atrophy occurs in a small per cent of cases but 50 per cent of myasthenics show microscopic changes of atrophy, fiber swelling and loss of striations with eosinophilia and frank necrosis in a few instances. Weigert in 1901 reported thymic enlargement in myasthenia gravis and in 1949 Castleman and Norris established the extent and type of thymic pathology seen in the disease. Series have been run since then and Grob states that 15 per cent of myasthenics have thymomas, one-fourth of which invade locally, 50 per cent have gross thymic enlargement (microscopically showing an abnormally great number of lymphoid follicles and germinal centers) without thymoma, 14 per cent show the microscopic changes without gross enlargement, 14 per cent are normal microscopically and in 7 per cent the thymus is not found. Coers and Desmedt in 1959 reported microscopically abnormal motor nerve endings in myasthenics which they have not found in any other neuromuscular disorder. They classify the change as dysplastic and it may be described as a terminal arborization with large serially arranged knobs along an elongated end plate region. It was present in four out of six myasthenics biopsied with 6 to 45 per cent of examined end plates having the defect. A much more extensive study needs to be done to confirm this finding. Electron microscopic studies have been performed without thus far finding a characteristic nerve terminal or end plate change

in myasthenia gravis. However, Zack has found abnormal myasthenic junctions and further research in this area is needed.

Since no central or peripheral nervous system defect or innate muscular contractile defect to physiological testing has been conclusively demonstrated and since there is clinical improvement with anticholinesterase drugs and some similarity between curare poisoning and myasthenia gravis, the predominant thought and investigation has naturally been directed toward a neuromuscular transmission defect for the past 25 years. The nature of the block or defect has been studied extensively by drug administration and electromyographic testing but it remains unknown whether or not there is a defect in ACh production, an abnormal response to ACh by muscle end plate, or a blocking substance at the end plate. It was once thought that an excess of cholinesterase might be responsible for weakness but myasthenics have normal esterase levels in blood and muscle. A curare-like competitive block theory was one of the earliest and most predominant but it fails to explain the reversible increase in neuromuscular block following short periods of intense activity seen in myasthenics. Hemicholinium (HC_3) simulates the myasthenic block well as reported by Desmedt (1960). It acts by decreasing production of ACh. It is possible that it acts by inhibiting the enzyme cholin-acetylase and myasthenia gravis then might be due to a defect in this same enzyme making it an inborn error of metabolism. Possibly there is a circulating agent which acts as does HC_3 .

Efforts have been made to establish an endocrine relationship because of the influence of puberty, menstruation and pregnancy on the female myasthenic, the tendency to spontaneous remissions and exacerbations and the profound modifications in the clinical course sometimes occurring with concurrent thyroid, adrenal or pituitary diseases. However, at the present time there is no convincing evidence that myasthenia gravis is an endocrinopathy.

Grashchenkov and Perelman find a low blood level of adrenalin-like substances in myasthenia gravis and an elevated level when neostigmine is administered. They note the fact that adrenalin-like substances are valuable adjuncts in therapy. They also feel that an abnormal tissue respiration is present and present experimental evidence for a visceral component of myasthenia gravis. The latter consists of decreased salivation in myasthenic exhaustion returned to normal by neostigmine. From this and the possible endocrinological character of myasthenia gravis, they postulate a disturbance of a central regulator of intermediary metabolism, tissue respiration and endocrine function in the diencephalon or hypothalamus. Klingman also suggests a metabolic defect since he has found increased blood levels of purines, uric acid and ATP in myasthenics.

Foetal whale and myasthenia gravis thymus acetone extracts contain a quaternary ammonium neuromuscular blocking substance that might be gamma-Butyrobetain. Methyl and ethyl-g-Butyrobetain blockade can be reversed by methyl histadine and ethyl carnitine.

Patients with pernicious anemia excrete g-Butyrobetain in their urine. In addition to adding new impetus to the circulating block theory and theories relating the thymus to the etiology of myasthenia gravis, these findings suggest that interesting results might be obtained from clinical trials of myasthenics with ethyl carnitine, methyl histadine and vitamin B₁₂.

In addition to the above diverse etiological investigations, it is interesting to note that parotid gland extracts have been reported as beneficial in treating myasthenics.

Auto-Immunity

The possibility that myasthenia gravis is an autoimmune disease was first suggested in passing by Smithers in 1959. Nastuk presented preliminary studies in serum C activity in myasthenics in 1956 after noting frog muscle lysis with myasthenic serums which he reported in 1959 but he did not state the possibility of auto-immunity until October, 1960 which is the same month that Simpson published an extensive article dealing with auto-immunity and myasthenia gravis.

The auto-immune theory of the etiology of myasthenia gravis postulates the existence of a circulating or attached antibody to muscle or end plate protein which blocks the action of ACh in myasthenics. This antibody being produced possibly in the thymus by a forbidden clone of immunologically competent cells or by some other component of the "reticulo endothelial" system in response to the abnormal introduction into the lymphatic system of muscle protein which is therefore not recognized as self by antibody producing cells. Closely allied to the above purely auto-immune mechanism would be the mechanism of post infectious delayed hypersensitivity to muscle or end plate similar to that postulated in rheumatic heart disease and glomerulonephritis.

Immunology is also an area of numerous unexplained phenomena and vigorous investigative activity. Ehrlich in 1900 was probably the first to assert that the organism must recognize self from non-self when he published his "Horrors Autoxicus" concept, whereby the body is unable to destroy its own normal tissues. He proposed a chemical explanation of antibody formation in which antigen bound or destroyed preformed antibody and thereby stimulated excessive production of the antibody. Post infectious immunity and hypersensitivity absorbed most of the

attention of immunologists for several years thereafter and Ehrlich's thoughts were more or less neglected until after 1930 when immunologists broadened to a consideration of immunological homeostasis. Three experiments have been helpful in removing the "recognition of self" concept from the realm of pure theory. In 1942, Kidd demonstrated serum antibodies to sedimentable cell constituents from tissues of the serum donor. Owens demonstrated red cell chimeras in calves from multiple births in 1946. And finally in 1956 Medawar presented experimental proof of acquired immunological tolerance in mice.

Ehrlich's Darwinian selective approach to the formation of antibodies has been followed by Burnet and others who propose a clonal selection theory of immunity. They propose that certain cells, probably preplasma cells, plasma cells or lymphocytes, are endowed with the ability to form antibodies to a specific one to one half dozen antigens during prenatal life. An antigen then stimulates in some way the cell or cells producing its antibody to proliferate giving rise to a clone of immunologically competent cells. There is no conclusive evidence for or against this theory but a study of peritoneal exudate cell antibody formation *in vitro* suggests that the response occurs too rapidly for a clone of cells to be able to proliferate. Also, if this theory is correct, the organism has to have preformed in it antibodies to all possible antigens. That is not likely since new antigens can apparently be synthesized at will in a laboratory and the number of possible antigens may not even be a finite number. Burnet does not attempt to explain how the clones manufacturing antibodies to "self" proteins are eliminated in prenatal life and this is an all-important consideration.

The majority of investigators continue to adhere to a Lamarckian explanation in which antibodies are formed *de novo* in response to antigenic stimulation. Also, most investigators now feel, contrary to Ehrlich, that the organism may react against itself. Support for this feeling comes from the three above cited experiments by Owens, Kidd, and Medawar as well as the fact that certain tissues normally isolated from vascular channels will, under specific circumstances, act as antigens and, also, in the presence of Freund's adjuvant, streptococcic or other additives certain organ substances will react with themselves. Also, auto-antibodies have been induced in experimental animals but the disruptive effect of these *in vivo* has not yet been seen. In addition, certain red cell diseases, e.g. acquired hemolytic anemia, seem to be caused by red cell directed auto-antibodies. There are numerous variations in the above two theories of immunological homeostasis to explain auto-immuno-

logical disease. The postulated biological homeostasis, other than the anti-infections advantages, is based on the concept that the whole process of evolution requires that errors of replication occur. If such an error should occur in the repopulation of mesenchymal cells such as in the process of neoplasia, the organism would have an inward directed defense mechanism for the destruction of abnormal or foreign "non-self" cells.

Plasma cells or immunological clones might be damaged by radiation and produce an abnormal gamma globulin or some foreign factor might act as an adjuvant. An infectious agent or drug might alter or expose proteins to form antigens or they might attach to form haptens. It might be that the DNA of an infectious agent could precipitate the formation of antibodies which could transfer reaction to "self" DNA. There is no experimental evidence to support any of these variations.

The mere demonstration of antibodies to a tissue does not prove auto-immunity or even that the antibodies initiated the disease, as demonstrated by the fact that normal people may have the same antibodies as found in high titer in Hashimoto's disease.

Auto-antibodies are also seen in myocardial infarction and viral hepatitis but their time of occurrence and the nature of the diseases makes it unlikely that they have any etiological significance. The only conclusive evidence that auto-antibodies cause disease would be obtained by infecting auto-antibodies into patients and precipitating pathological lesions. Large amounts of high titer antibodies, transfused into experimental animals have not effected lesions nor has serum with high titer of rheumatoid factor transferred the disease. Perhaps only suspended cells such as erythrocytes are affected by auto-antibodies and solid tissues are unharmed. In this view, it is noted that transplacental transfer of antibody gives rise to suspended cell disease (anemia, erythroblastosis fetalis, idiopathic thrombocytopenic purpura) but not solid tissue disease (systemic lupus erythematosus, thyroiditis, rheumatoid arthritis). Actually auto-immune disease in experimental animals has been transferred only by living lymphocytes. When it is noted that delayed skin reactions occur in auto-immune diseases, the similarity between it and delayed hypersensitivity becomes interesting, since the latter is also transferred only by living cells, manifests skin reactions and is associated with antibody titers that seem to have no relationship to pathogenesis.

The Thymus in Myasthenia Gravis and Immune Disease

The incidence of thymic pathology in myasthenia has already been outlined and noted to be very high.

Attempts to link the thymus with the etiology of myasthenia gravis have been made since as long ago as 1939 when Blalock performed the first thymectomies in myasthenics.

No conclusive etiological connection has yet been found but recent information gives new luster to the possibility. The thymus has been found to have an immunological function as demonstrated by the following experiments: Marshall and White injected trypan blue and streptococcal polysaccharides into the blood streams of experimental animals and found that only histiocytes around small blood vessels in the periphery of the thymus collected the material unless the thymus was previously injured. However, when antigenic material was injected into one lobe of the thymus, germinal center formation occurred in that lobe similar to that seen in myasthenia gravis. Stoner transplanted mouse thymus glands into the anterior chambers of the eyes of Cobalt 60 irradiated (600 rep.) mice and injected tetanus toxoid intraperitoneally or intradermally. He obtained satisfactory primary and recall responses. Fichtelius thymectomized young guinea pigs and ran controls with sham operated and unoperated animals. He obtained lower antibody responses in the thymectomized and sham operated animals than in the unoperated pigs.

The organ is also a source of circulating lymphocytes and produces a lymphocyte stimulating factor. Miller reports that thymectomy in neonatal mice is associated with severe depletion of lymphocyte population and serious immunological defects in the mature animal. From the above information it seems possible that the thymus is the originator of an antigenic substance which might cause the histological pictures seen in myasthenia gravis. It is interesting to recall that a neuromuscular blocking substance has been isolated from myasthenic thymuses.

The effect of thymectomy on the course of the disease is therefore important, but disappointing. Grob summarizes over 20 years of surgical results. Patients with thymomas occasionally remiss after the procedure but most have a poor prognosis which is seldom altered by the operation. Even in patients without thymomas, crisis may ensue following the operation and it is generally not recommended except in young females without thymomas who have had the disease less than ten years and who are not doing well on medical management. There are cases recorded in which asymptomatic individuals with thymomas developed myasthenia gravis following thymectomy. It has been suggested by McGee and others that the thymus does not produce the etiological agent because three cases of transient neonatal myasthenia occurred in infants of mothers who had thymectomies prior to pregnancy. It is possible that

neonatal myasthenia is transmitted via transplacental passage of cells such as might occur in delayed hypersensitivity. The thymus then may or may not be linked with the etiology of myasthenia gravis. The thymus and the end plate may both be target organs for an as yet unknown agent.

Myasthenia Gravis and an Auto-Immune Etiology

Two pieces of experimental evidence have been published since an auto-immune mechanism for myasthenia gravis was first proposed. Strauss pooled the serums of 10 myasthenics with early progression of their disease. He tagged the globulin with fluorescein isothiocyanate and demonstrated its ability to localize on the muscle striations of myasthenics, non-myasthenic and non-human muscle. His control of normal serum was unable to do this.

Untagged myasthenic serum was able to block the tagged serum. Myocardium did not stain nor did thymic tissue. It has been since determined that the 7S globulin is the bound portion. One sample of serum from a patient with dermatomyositis also tagged but serums from patients with muscular dystrophy, periarthritis nodosa and polymyositis did not tag. This is highly suggestive evidence for an auto-immune mechanism, but other sources of a circulating protein agent are possible. A pool was used and at that only ten sera were tested so that a single abnormal protein from one of the patients could have given these results. A clinical syndrome closely akin to myasthenia gravis occurs with small cell carcinomas of the lungs. One of these patients may have had a myasthenia-like syndrome, the etiology of which being different from true myasthenia, could have invalidated the test. The concept of more than one etiology for myasthenia accounting for some of the bazaar experimental results seen in the disease is plausible but only confuses the issue at this time.

Nastuk has been working with myasthenia serum complement for several years in an attempt to link it to the lysis of muscle which occurs with myasthenic serum. He has demonstrated that serum C activity is significantly altered in myasthenia gravis, such that it is usually high during remissions and depressed during exacerbations. Complement concentration is fairly constant but certain conditions are known to change it. It may increase in carcinomatosis, after coronary occlusion and in rheumatic fever while decreases are ordinarily seen in acute glomerulonephritis, in nephrosis, in some cases of serum sickness and in overwhelming infections.

It is readily destroyed by a variety of circumstances such as the presence of bacterial contaminants in se-

rum or unknown kinds of factors in sera themselves, particularly in patients with syphilis, leprosy, and liver disease. Its fluctuations are not necessarily dictated by antigen antibody binding reactions. The complement fluctuations in myasthenia gravis are therefore not conclusive.

Even if a circulating auto-immune factor could be proven to exist it would not have to be the etiology but might only be the by-product of the disease process.

Corticotropin and corticosteroids are known to depress some immune responses and are used to treat certain supposed auto-immune diseases with some degree of success. The use of corticosteroids has been very discouraging. Although corticotropin has precipitated remissions, in a large number of patients an equally large number have either remained unchanged or become more severely ill. It has been recommended that the drug be given in gradually increasing increments, while the patient is carefully watched, and then stopped for the best chance of a remission.

Summary and Conclusion

The theoretical considerations of the etiology and mechanisms of myasthenia gravis have been outlined with special consideration of the role of auto-immunity in myasthenia. The existence of transient neonatal myasthenia gravis has been cited as very suggestive of a circulating neuromuscular blocker. The fluctuations in serum C of myasthenics and the presence of a muscle tagging protein fraction in myasthenic serum have been discussed.

These pieces of information provide substantial reason for continued investigation of auto-immunity in myasthenia gravis.

Of the many possible experimental maneuvers, three seem among the most likely to yield useful information:

1. Inject human muscle or end plate protein into experimental animals and absorb the antiserum with various animal tissues and then determine whether or not antibodies to the muscle are present by *in vitro* cell lysis or complement fixation tests.
2. Label the above antiserum and inject it into man or experimental animals or *in vitro* muscle preparation to determine its site of localization.
3. Inject muscle or end plate protein into the animal from which it came in an attempt to form a lesion or syndrome.

The etiology of myasthenia gravis remains in doubt and the evidence for an auto-immune mechanism is presently not as strong as the evidence against such a mechanism.

EDITOR'S NOTE: References may be obtained by writing the JOURNAL, 315 West 4th Street, Topeka, Kansas.



Weakness, Disorientation and Rapid Deterioration

Case Presentation

This is in essence the story of an elderly Negro man who came into the hospital and died. We had very little information at the time that we saw him. His age was anywhere from 65 to 80. He was a retired linotype operator who was brought in by a neighbor. He had been living by himself for the three weeks before his admission. A relative who had been living with him said he had been in fairly good health until that time, and had had no reason to think he was ill at all. The neighbor who brought him in said he had been weak, confused, and would not eat. He also related that the patient had been observed to fall and hit his head on a curbing three weeks before his admission. It was not thought that he had lost consciousness at that time, but he ate poorly afterwards, walked with a staggering gait, and was confused and disoriented.

On his first admission to the Medical Center in 1949 he had had acute appendicitis which had abscessed and led to generalized peritonitis. An appendectomy was performed after a suitable period of time. He was admitted a second time in 1955 for a herniorrhaphy, but he also was found to have a duodenal ulcer.

The patient could not answer questions coherently, but the physical examination was not too remarkable. His blood pressure was 120/70; pulse rate, 80; respiratory rate, 19. He was afebrile. He weighed 160 pounds, and did not appear to have had any significant weight loss. He was a well developed, well nourished Negro man in no apparent physical distress, but he was confused and disoriented, and moved with a generalized body tremor. He coop-

erated poorly with examiners. He only submitted to admission to the hospital because he thought he was coming over for employment. His skin was dry with fair turgor. He did not look dehydrated. There was no remarkable lymphadenopathy. Examination of the eyes, ears, nose, and throat was not remarkable, but he had an old eye injury from childhood which limited fundoscopic examination on the left. His liver was felt 3 cm. below the right costal margin in the midclavicular line; it was smooth, firm, and non-tender.

Admission and subsequent laboratory results did not vary significantly. The admission urine specimen contained a heavy trace of albumin. The hemoglobin was 17.6 gms. per cent and the hematocrit was 53.5 per cent. The white count was 9,400 with 68 per cent polymorphonuclear neutrophils. The total serum protein was 8.1 gms. per cent; globulin, 4.93 gms. per cent with 36 per cent gamma globulin. There was 19 per cent BSP retention. The VDRL was non-reactive. Serum electrolytes, total and direct bilirubin, thymol turbidity, ammonia, transaminase, alkaline and acid phosphatase were all within physiologic limits. The intermediate strength PPD and histoplasmin skin tests were negative at 48 hours. A spinal tap was done January 29. The opening pressure was 13.5 cm.; closing pressure, 9.0 cm. The Queckenstedt was normal, and the fluid was clear but xanthochromic. There were 142 white cells with 10 per cent polymorphonuclear neutrophils and 90 per cent lymphocytes; 43 red cells; colloidal gold, 0000143322; sugar, 12 mg. per cent (simultaneous blood sugar, 124 mg. per cent); Wassermann, negative; total protein, 415 mg. per cent; routine smears for acid fast organisms and fungus, negative. Cytology showed no definite malignant cells; and neutral red, PAS stains, and polarizing microscopy were all negative. Three subsequent spinal taps gave essentially the same results except for an increasing protein to a level of 970 mg. per cent and

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a decreasing sugar to 6.4 mg. per cent the day before death.

The patient became progressively worse. He remained psychotic, disoriented, confused and hallucinating. On January 31 his respiration was of the Cheyne-Stokes type, and a grasp reflex was noted. Bilateral carotid arteriograms were done. On February 1 he had no purposeful movements, and pupils did not react to light. On February 4 there was very little response to pain; his temperature was elevated to 101° rectally; and Biot's breathing was noted. On his sixteenth hospital day his rectal temperature suddenly increased to 105°, and he died quietly.

Dr. Mahlon Delp (moderator): Are there any questions of Dr. McIntosh?

Mr. Arthur Vogel (student): Was an India ink preparation done on the spinal fluid?

Dr. Ann McIntosh (resident in medicine): An India ink preparation was negative on four occasions.

Mr. Arlen Winsky (student): Were spinal fluid chlorides done?

Dr. McIntosh: No, they were not.

Mr. Forrest Kendall (student): Was an EEG taken?

Dr. McIntosh: No.

Mr. James Hudson (student): Had the relative, before she moved out, noticed any personality changes?

Dr. McIntosh: None that she could pinpoint. She was an elderly sister.

Mr. Vogel: Was there any evidence of a penetrating lesion on his skull when you examined him?

Dr. McIntosh: No, there was no evidence of significant cerebral trauma.

Mr. Hudson: Would you please describe the terminal respiration?

Dr. McIntosh: I do not really think that there is anything else to say about it.

Mr. Kendall: Was there any evidence of otitis media or sinusitis? Any skin lesions?

Dr. McIntosh: No.

Mr. Winsky: In the cytological examination of the cerebrospinal fluid it mentions that there were no definite malignant cells. Were there any suspicious cells?

Dr. McIntosh: As I remember, they varied from class 1 to 3, but no definitely malignant cells were seen.

Mr. Winsky: Were normal opening pressures described on lumbar punctures?

Dr. McIntosh: The pressures were attempted on only about two occasions, and they were difficult to interpret.

Mr. Vogel: Was the grasp reflex unilateral or bilateral?

Dr. McIntosh: It was unilateral, and I am sorry that I do not know which side it was on.

Mr. Hudson: Over the last three or four days, or any time after your initial examination, were there changes in the pupils or the funduscopic examination?

Dr. McIntosh: There was no significant change as far as I could determine. He did not develop papilledema or evidence of hemorrhage if that is what you are looking for. His eyes had a wandering gaze. His pupils did not react.

Mr. Hudson: Did his eyes react any to convergence or accommodation?

Dr. McIntosh: That was a little bit difficult to determine since he was not able to cooperate.

Mr. Kendall: Could we have a better description of the fall?

Dr. McIntosh: As far as is known he had not been drinking; he just staggered and fell and hit his head on a curb.

Mr. Vogel: Did someone observe it or is that what he said?

Dr. McIntosh: A neighbor saw him after he had fallen, but before he got up.

Mr. Vogel: Were the mental changes just confusion? Did they occur immediately after the fall, or did somebody notice them a week or two later?

Dr. McIntosh: The time element is not really known; it was within three weeks' time that he was known to have become mentally confused. Apparently his confusion was intermittent, but at no time when he was in the hospital was he oriented.

Mr. Hudson: You said he apparently had not been drinking. Did he drink before?

Dr. McIntosh: The history hints of alcoholism. I believe he had drunk a moderate amount. He did have a degree of moderate alcoholism recorded on his previous admission.

Mr. Vogel: Was his inability to answer questions coherently a lapse of the ability to speak or to understand?

Dr. McIntosh: He could express himself, but he would give you no coherent or no reasonable answers. If you asked him where he was he might answer "Kalamazoo."

Mr. Winsky: Did you check to see whether there was any apraxia? Was he just talking or was it apractic speech?

Dr. McIntosh: All I can say is that he just would not answer; whether he understood what I said, I do not know.

Mr. Hudson: Was there a BUN done?

Dr. McIntosh: Four BUN determinations were all within normal limits.

Mr. Kendall: Did he smoke cigarettes?

Dr. McIntosh: He had a history of smoking on

an old chart, but we do not know from the last hospital admission.

Dr. Delp: Mr. Kendall, will you present the electrocardiogram?

Electrocardiogram

Mr. Kendall: We have the admission EKG (*Figure 1*). The heart rate was approximately 100 per minute with a normal sinus rhythm. Only one pre-

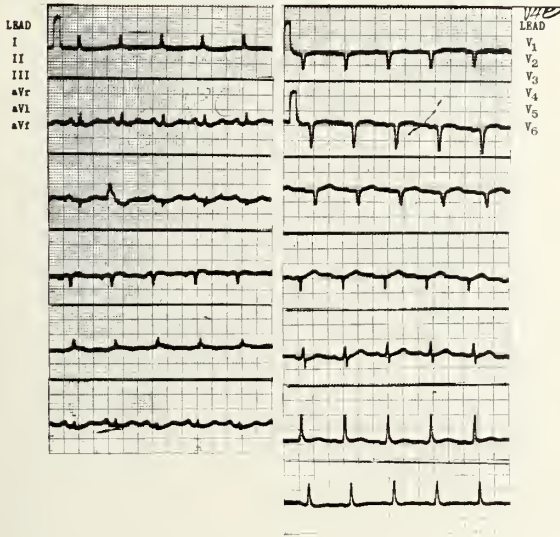


Figure 1. Electrocardiographic tracing made January 25, 1962.

mature ventricular contraction is shown. There is depression of the T wave in leads 1, V5, and V6. There is suggestion in leads I, II, and III of a biphasic P wave, and there may be a suggestion of poor progression of the QRS complex across the precordium. I think these findings are actually non-specific. The P wave changes may be an indication of left atrial hypertrophy perhaps; the depressed T waves could indicate myocardial ischemia. An EKG taken seven years before was reported to be perfectly normal.

Dr. Delp: Mr. Winsky will now discuss the x-rays.

X-Ray

Mr. Winsky: In the x-ray of his chest taken on January 25 (*Figure 2*) the diaphragms are curved, and the right is perhaps somewhat elevated a little bit above the average or normal. The bony structures are normal, but there appears to be increased space between the ribs. This would be consistent with emphysema. The mediastinum is apparently of normal width. The heart is vertical, and does not appear to be enlarged. The aorta may be somewhat dilated in the ascending portion or may just be tortuous. There

are several small calcifications in the lung fields. There is also what appears to be "coin lesion" in the right apex. One can hardly tell except to say there is an increased density.

In the skull film the frontal sinuses are apparently normal. There are no lytic lesions in the bony structures. The skull appears to be of normal thickness and quite symmetrical. In the lateral view of the skull there is a small calcification that would probably be the pineal body. The sella is normal size and shape. An arteriogram was done here on January 31: the anterior cerebral artery is in the midline, and the middle cerebral artery is in normal position. In the lateral views the syphon is well visualized, and is normal in shape and position.

Dr. Delp: Do you have any comments, Dr. Germann?

Dr. Donald R. Germann (radiologist): We did interpret the arteriograms as normal; and certainly by the time we got to this point the gentleman was pretty sure that this was not a routine employment physical. I think perhaps I should say a few words just to help the students out just a little bit. The "coin lesion" is the most famous student trap of all. It is the articulation of the first rib with the costal cartilage. It does not make any difference whether it is the first part of the junior year or the last part of the senior year, students who have sat with me when I am reporting films will ask me at least once a day "what is this shadow?" So do not feel bad. It is a

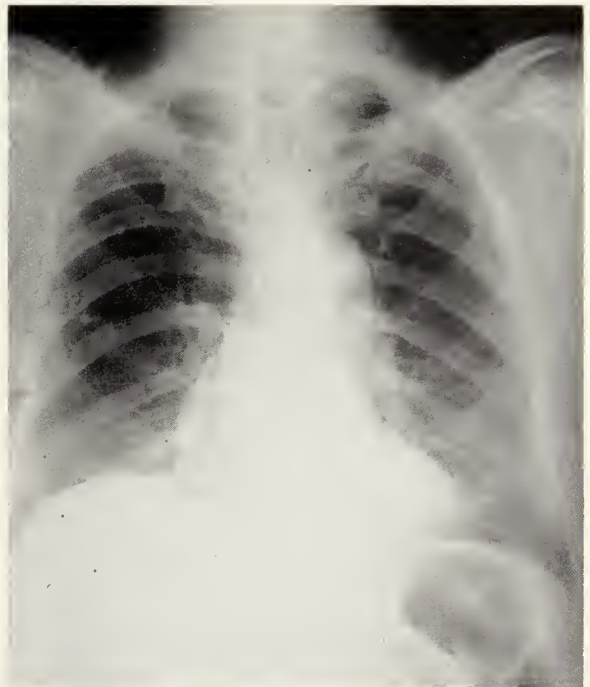


Figure 2. X-ray of chest taken on January 25, 1962.

common variation, and is simply a very prominent articulation of the first rib. The calcifications in the lung fields are something one sees in almost every adult chest. The aorta is moderately wide. I think this is an essentially normal chest for a man of this age.

Dr. Delp: Thank you Dr. Germann. Now, Mr. Vogel, may we have your discussion?

Differential Diagnosis

Mr. Vogel: The case today involves a rapid onset of symptoms, the decline, and the eventual demise of a 70-year-old man who was apparently in good health until suffering a fall of unknown causation and severity. The protocol for this case is an excellent example of brevity and succinctness, but unfortunately it is not comparably illuminating. Our differential diagnosis will be based on those processes which correlate the psychotic reaction, the rapid deterioration, and the laboratory findings. In view of the patient's rapid demise and positive cerebrospinal fluid findings we do not believe that his psychotic behavior can be explained on the basis of either a non-organic psychosis or cerebral arteriosclerosis.

Although a cerebral vascular accident could account for the rapid onset, we exclude this diagnosis because of the absence of localizing neurological signs, the absence of step-wise progression of neurological deficits, the lack of partial or even transitory remission of these deficits, the incompatibility of the laboratory findings, and the subsequent hospital course.

An epidural hematoma is ruled out because of the lack of evidence of a skull fracture, the incompatibility of spinal fluid findings, and the relatively long duration of the patient's illness as compared with the typical course of epidural hematoma due to arterial bleeding which usually causes death in 12 to 72 hours. A ruptured berry aneurysm could account for the sudden onset of the illness at the time of the fall, but there is no evidence of hypertension or recurrent hemorrhage into the cerebrospinal fluid; there were, instead, physical findings of progressive cerebral destruction. Also, the typical spinal fluid findings of increased pressure, normal sugar, and grossly bloody fluid were not present in this case.

The possibility of an acute or chronic subdural hematoma was entertained, but the lack of a lucid period before the onset of neurological deficits is against the diagnosis of an acute subdural hemorrhage. The frequency with which this occurs with cerebral contusion and laceration could, however, explain such a course. The chronic subdural hemorrhage is unlikely because of the rapidity with which the mental confusion and disorientation occurred, the lack of increased spinal fluid pressure, and the incompatibility of the cerebrospinal fluid findings. In

my opinion the possibility of trauma is a "red herring" in this case.

The increase in cerebrospinal fluid protein, decreased glucose, increased lymphocyte count, and the relatively normal pressure led us to consider an infectious process. Such an infectious disease cannot easily be ruled out. The clinical manifestations of viral encephalitides and meningitides are somewhat compatible, but are rejected because of the lack of a typical blood picture and because of the abnormal cerebrospinal fluid findings. Pyogenic infections of the nervous system were also considered. Meningitides caused by tuberculosis, cryptococcosis, pneumococcus, streptococcus and staphylococcus are high on the list. The usual clinical course is a subacute onset with headache, fever, and irritability. Signs of meningeal irritation appear within a few days. With progression the patient becomes stuporous or comatose, and then may have focal neurological signs. While our patient manifested few of these signs, meningitis cannot be excluded because of the frequency with which the aged patient shows less response to meningeal infection than does his younger counterpart. This is an exceedingly important point! Tuberculous meningitis is a good possibility, but one does not expect a cerebrospinal fluid sugar of 6 mg. per cent and a negative tuberculin test in this condition. Such a low value of sugar is usually caused only by a purulent meningitis, which does not fit in with the lymphocytosis manifested by our patient. Cryptococcosis is a possibility, either as a primary or a secondary complication, but the symptoms, the insidious onset, the prodromal symptoms, and the sensorium changes are not similar to those of our case. While the disease usually runs a course of about six months a short duration is not rare. One would expect an increase in cerebrospinal fluid pressure, and the extremely low glucose is unexpected with cryptococcosis. The India ink preparations were negative, but this occasionally occurs with cryptococcosis.

A brain abscess, although an attractive diagnosis, was dismissed because of the lack of evidence of a source of infection, the relatively normal cerebrospinal fluid pressure, the notably decreased cerebrospinal fluid sugar, the increased protein, the generally afebrile course, the lack of localizing signs, and the age of the patient. It is recognized, however, that subdural and epidural abscesses frequently give rise to no localizing signs; elderly people frequently fail to have a significant febrile response; and a source of infection is not always apparent. We do not believe that the cerebrospinal fluid findings are consistent with a brain abscess.

We think that we can best account for the patient's symptoms and clinical findings on the basis of a neoplasm. A patient with an intracranial tumor may

present in one of three ways: with a decline in general mental ability or with seizure; with unmistakable evidence of high intracranial pressure; or with a specific intracranial tumor syndrome. Initially our patient had neither evidence of elevated intracranial pressure nor a specific intracranial tumor syndrome. Instead he had evidence of diffuse involvement of the cerebrum and of the cerebellum, manifested by his staggering gait, disorientation, body tremors and psychotic state. The tumors most likely to present the observed clinical course are glioblastoma multiforme and metastatic carcinoma. The glioblastoma is a highly malignant tumor, and it shows multicentric growth. It may invade the meninges and spread along cerebrospinal fluid pathways. Its widespread dissemination could explain the mental changes and non-specific neurological signs that this patient exhibited. Because of the tendency for hemorrhagic areas to occur within a tumor and for cerebral edema to develop around the tumor, the acute episode that this man had could be explained on this basis. The cerebrospinal fluid findings of suspicious malignant cells, high protein, elevated lymphocytes, decreased sugar and the mid-zone colloidal gold curve would be compatible with this diagnosis. The carotid arteriograms militate against this diagnosis, and the reduced cerebrospinal fluid sugar is more suggestive of widespread carcinomatosis of the meninges and cerebrum. Carcinomas reach the brain by hematogenous spread. Probably 35 to 40 per cent come from the lungs, and approximately 15 per cent come from each the breast, the gastrointestinal tract and the kidney. In more than 75 per cent of the cases the metastases are multiple and are scattered throughout both cerebrum and cerebellum. They are often near the surface and involve the white matter, the cortex and the meninges. Intracranial lesions also frequently stimulate a polycythemia, such as was present in this patient.

In summary, it is our opinion that this patient had widespread carcinomatosis—both meningeal and cerebral—with increasing neurological deficit the last eight days of his life caused by progressive infiltration. It is our opinion that the terminal event was precipitated by aspiration.

Dr. Delp: Mr. Hudson, what is your diagnosis?

Mr. Hudson: I agree.

Dr. Delp: What is your second diagnosis, Mr. Hudson?

Mr. Hudson: I think that this could be attributed to a secondary malignancy, exact cause unknown.

Dr. Delp: Mr. Winsky?

Mr. Winsky: My second diagnosis would be an infection, probably cryptococcosis or tuberculosis.

Dr. Delp: Mr. Vogel?

Mr. Vogel: Abscess.

Dr. Delp: Any origin for it, Mr. Vogel?

Mr. Vogel: I would expect it to be hematogenous in origin.

Dr. Delp: Mr. Vogel, how do you explain this patient's polycythemia?

Mr. Vogel: Intracranial tumors frequently stimulate a polycythemia; the mechanism I do not know.

Dr. Delp: Do any other tumors do this?

Mr. Vogel: Tumors of the kidney often do.

Dr. Delp: Yes, but I am sure that there must be numerous other tumors that actually do this. Would you have any other explanation in case that your diagnosis does not stand up?

Mr. Vogel: He may have had some chronic emphysema.

Dr. Delp: Mr. Hudson, suppose we continue to accept the diagnosis of neoplastic disease, would you tell me why the spinal fluid sugars were so low.

Mr. Hudson: There are two explanations. One is that the neoplastic cells themselves, by increased metabolism, lowered the spinal fluid glucose. The second one, which seems to be more widely accepted, is that the diffuse involvement of the cerebral tissues interferes with the absorption of glucose in the spinal fluid due to the interference of blood-brain barrier.

Dr. Delp: Mr. Winsky, any comment?

Mr. Winsky: No.

Dr. Delp: Mr. Winsky, you had a second diagnosis which had to do with two possible infections. What about the negative skin test on this patient?

Mr. Winsky: Well, older people with tuberculosis and terminal patients frequently do not have positive skin tests.

Dr. Delp: If we accept a diagnosis of an infectious process how would you account for the xanthochromic spinal fluid?

Mr. Winsky: One frequently finds an increase in red cells in infection, and after the end of 12 days one may see xanthochromia from hemolyzed red cells.

Dr. Delp: Mr. Kendall, how often do you think you would find blood in the spinal fluid of a patient with an infectious process?

Mr. Kendall: Well, it would have to be more than an infectious process.

Dr. Delp: Ever hear of it?

Mr. Kendall: No, I have not.

Dr. Delp: Mr. Hudson, does it occur?

Mr. Hudson: Yes, one can have an infectious process eroding into a vascular area.

Dr. Delp: Give me an example.

Mr. Hudson: Cerebral abscess.

Dr. Delp: Does a cerebral abscess ever occur in meningitis, Mr. Winsky?

Mr. Winsky: I do not know of any cases.

Dr. Delp: Mr. Hudson, do you see anything significant in the extremely high spinal fluid protein and

the cell count which is not too high? Does it suggest anything to you?

Mr. Hudson: I attribute the increase in the spinal fluid protein and the relative pleocytosis of the spinal fluid to a tumor. This could be caused by pressure on vessels thereby rendering them more permeable, and that could explain the increase in the spinal fluid protein. I do not think it could be explained on the basis of a hemorrhage because it usually does not get that high.

Dr. Delp: Does the differential count in the spinal fluid fit your diagnosis of neoplasm, Mr. Winsky?

Mr. Winsky: Yes, it does fairly well.

Dr. Delp: Does this satisfy you, Mr. Kendall?

Mr. Kendall: Well, in general we could find nothing that explained the cell fluid count. Tumor seemed to explain it as well as anything else.

Dr. Delp: One final question, Mr. Hudson, how do you think the outcome in this case might have been altered?

Mr. Hudson: The rapid onset of this man's symptoms are almost blitzlike, and I feel that nothing could have been done about it.

Dr. Delp: Mr. Winsky?

Mr. Winsky: Assuming that the diagnosis of a widespread tumor is correct, I do not see any real indication to do anything.

Dr. Delp: Mr. Kendall?

Mr. Kendall: If it were a tumor it would have been too widely spread to do anything about it; if it were cryptococcosis we could have treated him. We could have diagnosed it if we could have gotten some positive India ink smears or any other evidence; we had four done without a positive smear. I read two reports and one said that it is difficult to culture the organisms and to observe them, and another one said it is very easy to do so.

Dr. Delp: Mr. Vogel?

Mr. Vogel: I do not think that we could have altered his course.

Dr. Delp: I will now call on Dr. Ziegler to open the discussion.

Dr. Dewey K. Ziegler (neurologist): There are only a few things that I could comment on. In the first place, this man was apparently delirious, and I think that is the reason for the difficulty in determining whether or not he was aphasic. In the face of a patient who is disoriented and whose general state of consciousness is impaired, one really cannot determine whether there is any aphasia that would point to a focal brain lesion. For aphasia to be useful as a localizing sign one has to have a patient who is in contact and who is attending to your questions. The patient was in a generally depressed state of consciousness which has no localizing value, and which is usually seen in more diffuse disturbances of

the brain. Similarly, the general body tremor points to a nonlocalizing aspect to his neurological disturbance. In this case we have very little to indicate a focal neurological disturbance and much to indicate diffuse brain involvement. We were, therefore, faced with a patient who had a rapidly increasing diffuse central nervous system disturbance and who was afebrile until the time of death.

He had striking spinal fluid findings, and all the clues certainly center around the spinal fluid. I would just make a few points about the spinal fluid. The protein was extremely high, varying from 400 to 900 mg. per cent, and one frequently sees some pigmentation of such spinal fluids, particularly if there is some blocking higher up in the region of the spinal cord. One has to be wary of ascribing other causes for the pigmentation when there is a protein of this extreme height. The real clue is the depressed spinal fluid sugar, and I think that this, in a case with everything else so extremely vague, is not at all vague but is specific. It is seen with any frequency only in granulomatous conditions of the meninges and sometimes in inadequately treated acute pyogenic infections. The granulomatous infections include cryptococcus, other fungi, and tuberculosis. There is much evidence against tuberculosis: he was never febrile, the course was very rapid, and there were no meningeal signs. All these were against tuberculosis which is usually quite a fulminating disease. The other entities which occasionally produce this are sarcoid and metastatic meningeal carcinomatosis which I would say the spinal fluid pattern and the clinical course best fits. A primary brain tumor such as glioblastoma can produce a low spinal fluid sugar, but it is an extreme rarity as compared to meningeal carcinomatosis. So I would believe that he had meningeal carcinomatosis from some primary neoplasm which we have not been able to identify. Statistically this is most commonly a bronchogenic carcinoma.

Dr. Charles Poser (neurologist): I do not have much to add to what Dr. Ziegler said except to re-emphasize that this patient had a xanthochromia which may have been due to the high protein. The same thing is seen characteristically in patients with malignant melanoma. Malignant melanoma could produce a meningeal carcinomatosis or melanomatosis. The high protein suggests an obstruction somewhere in the spinal canal. His spinal fluid pressure was so unusually low that one might even suspect that. Sarcoid should be included in the differential diagnosis, especially in an elderly Negro man. The very high serum gamma globulin might also be in favor of this. In an old man who is delirious and comatose I do not think that the absence of meningeal signs has any significance. If I had to choose between two possibilities in this man I would choose between

cryptococcus meningitis and carcinomatous meningitis.

Dr. Maxwell G. Berry (internist): I think that we are having a little trouble making a diagnosis; any time when you have four India ink preparations on a patient's spinal fluid you know that somebody did not really have any faith in the one that had been done before. As far as the patient's history is concerned it has been my experience that it is much more apt to be helpful not to have any history at all in situations of this sort. My final diagnosis on this patient, with the way things developed, would be different from the one that I thought about when I first read the protocol. It has been my experience that the only patients with tumors that I have seen with polycythemia have been those secondary to tumors of the kidneys. I would say that probably if the patient did have a tumor, that it originated in the kidneys.

Dr. William P. Williamson (neurosurgeon): I would like to emphasize that this man was a good candidate for having a subdural hematoma, even if we had not got a history of a fall. The elderly patient who becomes confused, has gross organic brain damage, begins to deteriorate, has an elevated spinal fluid protein and a few cells—such a patient can certainly have a subdural hematoma, and such a diagnosis must be strongly considered until it can absolutely be ruled out. The arteriograms definitely excluded this diagnosis. Also against it was the spinal fluid sugar. I do not believe he had a primary brain tumor because he would not likely go all the way to death without any localizing signs. A clear-cut differential diagnosis lies between cryptococcus meningitis and metastatic meningeal carcinomatosis. The latter should be the best diagnosis because the protein was so far out of proportion to the cell count. If this were inflammatory there should be more cells and not quite so high a protein.

Dr. Delp: We will now have the pathologist's report.

Pathological Report

Dr. John Kepes (pathologist): The patient was well developed and well nourished. He had a history of previous duodenal ulcer, and we found a gastrojejunostomy and a partial gastrectomy. On further examination of the abdomen we found some other changes. The left adrenal gland was considerably enlarged. Besides being enlarged there was a nodularity on the surface that had a tumor-like firmness. Cross section of the gland (*Figure 3*) showed a yellowish necrotic mass in the center of this grayish tumor-like nodule.

On the surface of the brain there were arachnoidal granulations of Pacchioni; otherwise the upper sur-



Figure 3. Cut surface of left adrenal gland showing nodular caseous masses.

face of the hemisphere was not very informative. On the basal surface (*Figure 4*), however, there was an opacity of the basal meninges which was most pronounced in the meninges deeper in the fissure of Sylvius. There was definite thickening of the meninges and a plastic exudate covering the basal arteries. The explanation for the block, and partially for the increased spinal fluid protein, was the complete obstruction of the cisterns around the brain center. As the result of the obstruction quite marked hydrocephalus developed. The lateral ventricles were dilated, and there was some concomitant atrophy of the white matter. The wall of the lateral ventricle (*Figure 5*) showed a nodularity that consisted of little masses protruding from the ependyma which might look just like so-called granular ependymitis. Under the microscope, however, there was a little more than just granular ependymitis. In the adrenal there was a caseated granuloma (*Figure 6*) with a Langhans' type of giant cell and a great number of epithelioid cells surrounding the caseous mass.

There were numerous large lymph nodes throughout the abdomen, such as in periaortic, mesenteric, and other locations. They felt quite firm, and, interestingly, they did not have any calcification in them; they showed a fibrotic process that might be quite non-specific except for the presence of Langhans' type giant cells within the fibrotic mass in the lymph node.

A section of the lung from one of those caseated calcified masses seen in the x-ray contained a lot of anthracosis and old calcification. In addition to the

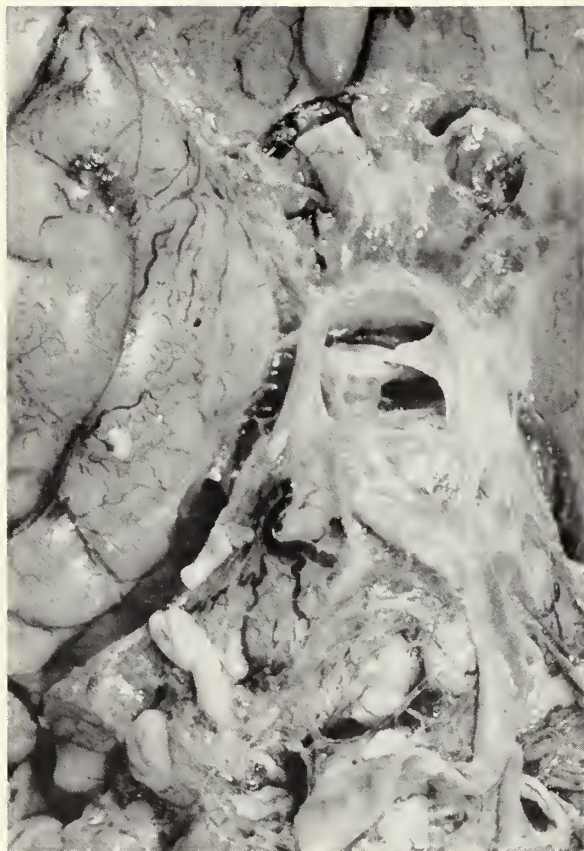


Figure 4. Basal surface of the brain: thick, partly organized fibrinous exudate covers the pons, basilar artery and the optic chiasm.

fibrous process and calcification in the lung there were some active Langhans' type giant cells.

On the surface of the cerebellum (*Figure 7*) there was a massive exudate consisting of fibrin, part of which was caseated and contained giant cells. I would like to emphasize, as I always do when I am talking about meningitis, that it is not a disease involving only the meninges. Every meningitis is a meningo-encephalitis at the same time, and we could see very well on this occasion how the inflammation eroded into the surface of the molecular layer of the cerebellum. Again, there were Langhans' giant cells in the neighborhood of the blood vessels of the meninges. In proximity to the blood vessels were giant cells, and the whole process surrounded and involved the blood vessels. This is partly an explanation for xanthochromia. There was a good example, rarely seen to such a classical extent, of tuberculous phlebitis (*Figure 8*). The granulomatous process arose inside the wall of a meningeal vein, not in the surrounding tissue but within the layers of the wall. It is not surprising that such a blood vessel should eventually develop a little leak and cause some subarachnoid hemorrhage. High

power showed that the granular ependymitis (*Figure 9*), was actually tuberculous ependymitis, and the granulations were secondary tubercles inside the ventricles.

When we get to this point it is time to introduce the villain of the show. We were able to demonstrate acid fast rods in some of the sections, and subsequent cultures confirmed the diagnosis of tuberculosis. We were glad to be able to find the organism in the stained sections before the results of the cultures came back.

I think we should say a few words about tuberculous meningitis in adults. Sir Russell Brain in the "Diseases of the Nervous System," gives a beautiful account of this condition. In the minds of most of us tuberculous meningitis is a disease of children and young adults, and it is a rather acute and fulminating disease as far as the onset is concerned. In elderly patients, on the other hand, it can be quite insidious as it was in the present case. The focus for the infection can be a lymph node, the lung, a bone, a joint, or the genito-urinary tract. Rich and McCordock believe that in every case of tuberculous meningitis the infection to the meninges originates in a focus somewhere in the cortex or near the ventricles. In other words there is a pre-existent tuberculous granuloma inside the parenchyma of the brain, and somehow, at one time or the other it finds a way to break out to the meninges. That is the way the meningitis begins. Some experimental findings support this theory. By intravenous injection of uncounted millions of tu-



Figure 5. Lining of left lateral ventricle of brain with numerous tubercles of the ependyma.

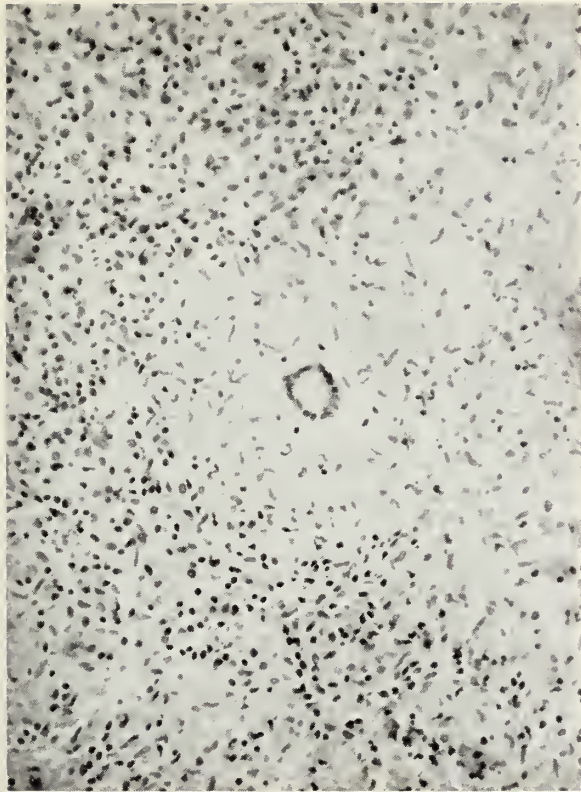


Figure 6. Tubercle with epithelioid cells and Langhans' type giant cell in the adrenal.

bercle bacilli it is possible to produce miliary tuberculosis in susceptible animals, but it is very difficult to produce meningeal tuberculosis. In order to do that it is necessary to introduce the organism into the subarachnoid space. About one-fourth of the cases of tuberculous meningitis are caused by the bovine bacillus and three-fourths by the human strain.

As far as the symptoms are concerned in adults, the mental changes can be quite conspicuous and symptoms of confusional psychosis may precede those of meningitis by several weeks. The meningeal irritation with nuchal rigidity may be milder than in pyogenic infection. I would like to mention here that I was looking for facts that fit into this case. The intradermal test is negative in about 15 per cent of the cases. The spinal fluid usually shows high protein, low sugar, and the lymphocytes are, of course, important. If you find tubercle bacilli in the spinal fluid that clinches the diagnosis, but their absence is much less significant.

Now we come to the trauma which some of you called a "red herring" in this case. Maybe it is not quite such a "red herring." At least some authorities feel that trauma definitely may have some effect in bringing an outbreak or an exacerbation of tuberculous meningitis. Russell Brain feels that there is some-

times a history of a fall or other injuries in the case of tuberculous meningitis and he considers that it has a possible effect in the flare-up of the disease. Rich himself mentions two young men where he definitely believes that head trauma was followed by typical tuberculous meningitis. Of course that would fit his theory beautifully, namely that there would be a cortical tubercle and the little contusion of the cerebral cortex would bring the tubercle bacilli into the subarachnoid space to cause tuberculous meningitis.

In case you are not influenced by these factual reports of trauma and tuberculous meningitis, you should be at least somewhat impressed by a piece of fiction. I have in mind the very beautiful and stirring novel by Eric Knight, "This Above All." This is a story about England's "finest hour." The words "This Above All" refer to Shakespeare's Hamlet, of course, when Polonius gives fatherly advice to his son Laertes, who is leaving for Paris: "This above all, to thine own self be true." The hero of the book is a young English soldier. Those who have read the book will recall that he was a conscientious objector to military service. In spite of the fact that he had a



Figure 7. Tuberculous meningitis of the cerebellum. The exudate is rich in fibrin, partly caseated. The inflammation extends into the superficial cortex in many places.

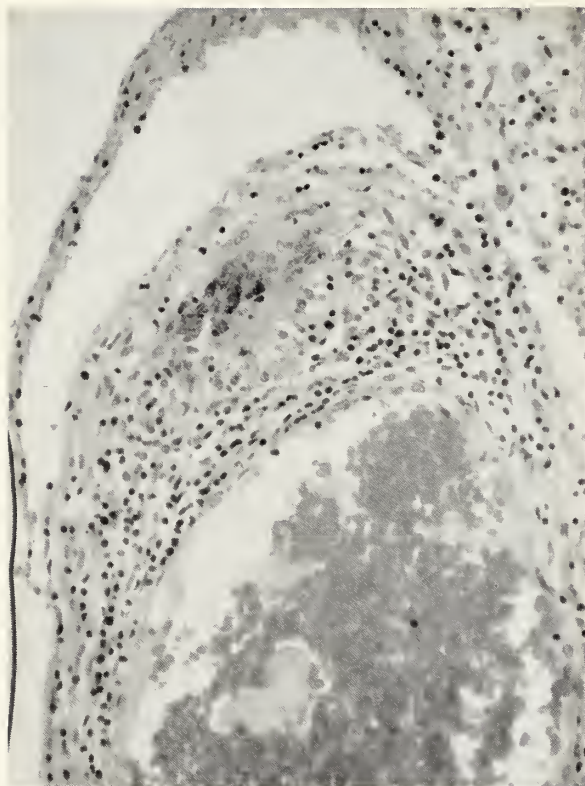


Figure 8. Tuberculous phlebitis of the meninges. A Langhans' type giant cell is seen in the wall of a vein.

hero's record at Dunkirk, he was AWOL and hiding from the authorities. One night he was walking on a field, and an overzealous British farmer who was a member of the civilian patrol saw him and thought he might be a spy. He chased him and finally injured the hero's head with a pitchfork. From this time on, the poor man had many episodes of irritability and seizure equivalents, like sudden loss of contact with the surrounding world. Toward the end of the novel he was injured again during an air raid on London. He was taken to a hospital, and by a tragic twist of fate the neurosurgeon father of his fiancée had to discover, while doing a craniotomy, that he had an incurable meningeal tuberculosis, of which he died shortly thereafter. Of course streptomycin and INH were not available in 1941. These and other antibiotics came into use only after the war. Unfortunately the author, Eric Knight, himself did not live to see this era. He was shot down in action as a Royal Air Force pilot in 1942.

I think the case we discussed today was an interesting and unusual one, but if no other good comes from this discussion than to make some of you who haven't read it yet read the book "This Above All," I think that today's session was not wasted. Thank you.

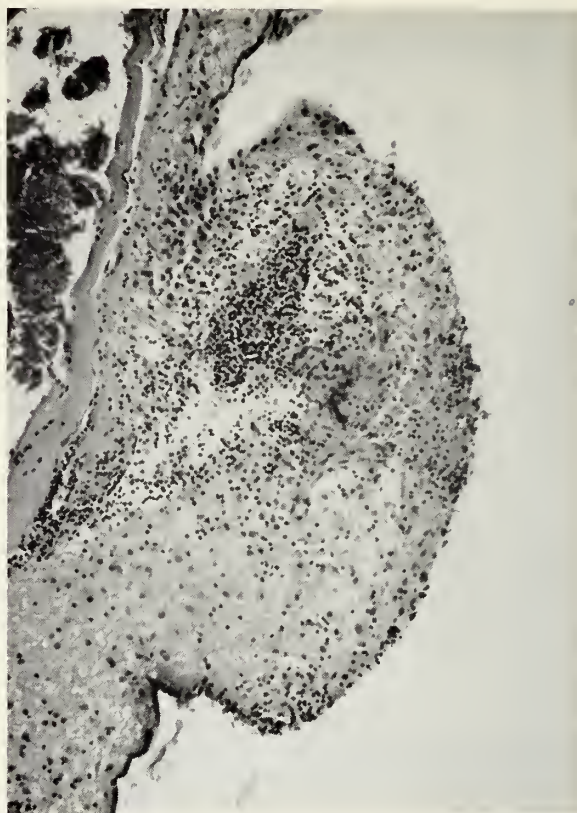


Figure 9. Tuberculous ependymitis. Ependymal lining is preserved at the edges of the lesion. A giant cell and many lymphocytes are seen in the center.

Dr. Delp: Dr. Ruth, could you tell us in one minute how the outcome of this case might have been altered?

Dr. William E. Ruth (internist): I do not know that the outcome of this particular case might have been altered in any way, but when presented with a problem such as we see in a man like this, there is one very important clinical fact which must always be kept in mind: that is what can we do about a treatable disease of which tuberculous meningitis is one. In this man I do not know that the outcome would necessarily have been good because of the stage to which his disease had probably progressed by the time he was first seen. Of the large series dating back to 1949 of some 300 cases of this disease studied by the Veterans Administration and Armed Forces group the results were miserable. There are only 50 of these patients who had tuberculous meningitis who are still living. There are current series in the literature which are better. Dr. Lepper's group in Chicago have perhaps one of the best. In these groups INH has altered the course. What sort of treatment and what drugs are used are not nearly so important as begin-

(Continued on page 240)

The President's Message

DEAR DOCTOR,

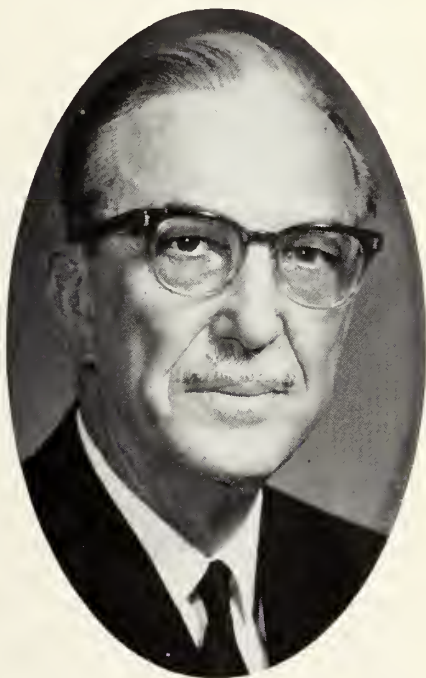
The society has been guided through a rather strenuous legislative session by Doctor Francis and Mr. Ebel, assisted by many helpful members who have appeared in committee meetings.

Several problems have been referred for legislative council study—namely “Healing Arts and Basic Science Boards,” “Workman’s Compensation Fees” and “Standards for Drivers.”

Also the Judicial Council is to study the Probate Code and Commitment laws.

The implementation of the Kerr-Mills Act will undoubtedly require consultation with the Board of Social Welfare.

All of these things point to activities which will need guidance in the year to come.



H. St. Clair O'Donnell M.D.

President



Medical Advancement Is Threatened

Incredible as it seems, a small but vociferous minority would ignore the life-saving medical and surgical accomplishments of past years and would stifle medical education and further advances against disease by inappropriate federal legislation. Adequate curricula in our medical schools must include work with experimental animals. Also, while research in human disease sometimes can be carried out safely on patients, more often the actual or potential hazards involved cannot justify the use of unknown drugs or untried operations without prior investigation in animals. If human benefits are to be realized from new ideas, new concepts and new drugs, every assurance of safety for human patients must be obtained. No amount of test-tube experimentation can adequately supply this. If we are to reap these medical benefits, they must be developed and proven safe in lower vertebrates. Our reluctance to obtain essential medical information from experimental animals can only be outweighed by our conviction that we don't like animals less; we like humans more. We would not be honest with ourselves, if we were to subject a patient to a new procedure which had not been evaluated adequately beforehand. We would not be honest with ourselves if the medical students, medical school graduates and specialists we introduce to patients were trained through inadequate curricula in which fundamental principles of physiology, biochemistry, surgery and the other medical disciplines were not and could not be adequately demonstrated in vertebrate animals. What about the animals? Their invaluable contribution to human welfare demands that they receive considerate treatment, appropriate quarters and diet, and freedom from unnecessary discomfort and pain. Do they get all this? With very few and progressively fewer exceptions, they do—increasingly under the supervision of licensed, experienced veterinarians.

Bills are currently being introduced into Congress under the guise of providing for humane treatment of vertebrate animals in laboratory investigations to be conducted by federal agencies and by grantees, such as our medical schools. Restrictive features which could be invoked through a new federal bureau and which could seriously hamper both medical education and research are expressed or implied. Among these are: (1) restricted licensing of research personnel for animal experimentation, to an extent which could seriously impede the education of medical students and trainees in research and medical specialties, (2) inspection and "policing" procedures which might be supervised and executed by individuals lacking research training, or even training in any aspect of medical or biological science, (3) requirements for submission to the bureau of rigid research plans if they involve animals, and approval of such plans before initiation of research, (4) submission and official approval of modified research plans if changes in experimental design involving animals become advisable in the opinion of the investigator, (5) limitation of numbers of animals to be used in specific projects, (6) authoritative termination of research projects, and (7) use of vertebrate animals in research only after all other means of investigation have been completely exhausted in the judgment of supervising authorities.

The three bills in question are: the Clark-Neuberger-Young bill (S-533), the Ashley bill (HR-4620) and the Randall bill (HR-4856). The Senate bill (S-533) has been referred to the Committee on Labor and Public Welfare, the two House bills to the Subcommittee on Health and Safety of the Committee on Interstate and Foreign Commerce. The Ashley bill is essentially the older Griffith bill and the Randall bill the older Moulder bill which were prepared for the previous Congress.

The National Society for Medical Research (NSMR) and its affiliates strongly urge opposition to these bills by means of letters written by individuals to congressional representatives. In Kansas these are Senators Frank Carlson and J. B. Pearson and Representatives Robert Dole, W. H. Avery, R. F. Ellsworth, G. E. Shriver and Joe Skubit. Letters written directly to the committees named above would also be helpful. Letters written by physicians, their patients and their associates in community activities would doubtless carry enormous weight in this vital issue. Great concern has been expressed over the overwhelming number of letters being received in support of the restrictive bills and over the lack of those expressing opposition.

NSMR is also anxious to take strongly *positive* action in regard to establishing official national standards for use of animals and for animal care in teaching and research. It is currently giving careful study to two new bills which appear less restrictive than the three already named. These bills are the Fogarty bill (HR 4840) and the Roberts bill (HR 4843). However, NSMR and its affiliates are most interested in introducing a bill prepared by medical educators and research scientists which would maintain high standards of animal care, would provide additional means of training individuals in the science of animal care, would not lead to obstruction of medical teaching and research and would preclude pending or future obstructive legislation.

While NSMR's final position and proposed legislation is being formulated, it urges opposition to the three restrictive, pending bills currently under study in congressional committees (i.e., S-533, HR-4620 and HR-4856).

LAWRENCE PETERS, M.D.
University of Kansas Medical Center
(Chairman, Committee on Animal Care)

See You in Atlantic City

THE AMERICAN MEDICAL ASSOCIATION will hold its 112th annual meeting June 16-20 at Atlantic City. In urging you to attend, I would like to write briefly about an aspect of science that is rapidly becoming a very serious problem. I refer to what scientists have called "The Publication Explosion."

Research men are faced with the dictum of "publish or perish." Naturally, they publish. They publish so much that some areas of science now have such a volume of literature that it is often cheaper and faster to repeat an experiment than to search the literature and find out what others have done in the same field.

It has been said that it would be necessary for a physician to read one book an hour just to keep up with new findings in his own specialty. This obviously is impossible.

There were four million scientific documents published in 1962. These included some three million papers and articles in some seventy thousand technical and professional journals. The bulk of these are in the life sciences, particularly medicine. They are published in at least 65 different languages, in almost every country of consequence in the world.

Faced with this overwhelming deluge of paper, the physician in practice, already one of the busiest men in his community, may be inclined to just throw up his hands.

The scientific meeting helps greatly to fill the gap and to help the physician keep abreast of new developments. At the AMA annual meeting, in a short space of four or five days the physician has his choice of literally hundreds of scientific papers covering the broad spectrum of medicine. He can select half a dozen lectures daily from the program as a whole. Or he can concentrate on his specialty section and its meetings.

The physician can select outstanding medical motion pictures, fresh from the production line. Or he can view live telecasts or surgery and medicine in action in new areas.

It would take years of reading an hour a day to learn all that can be learned in five days at the annual meeting of the American Medical Association. The scientific exhibits alone are a good post-graduate course in medicine.

All of us as physicians are well aware of the problems of keeping abreast, of bringing the findings of the researchers into our practice as soon as possible. Through the annual meeting of our national association, we can make considerable progress in this important respect.

As president of the American Medical Association, I personally urge every American physician to make plans now to attend this annual meeting June 16-20 in Atlantic City.

GEORGE M. FISTER, M.D.
President, American Medical Association

A.M.A. Publications

In response to numerous requests the following information applies to subscriptions for publications issued by the American Medical Association.

Dues paying members receive four publications,

the subscription prices of which are included in the dues. All A.M.A. members who pay dues receive the *Journal of the American Medical Association*, *Today's Health*, and the *A.M.A. News*. In addition to these each member receives a subscription to the specialty journal of his choice.

There are ten from which the member may make his selection. These are: *American Journal of Diseases of Childhood*, *Archives of Dermatology*, *Environmental Health*, *General Psychiatry*, *Internal Medicine*, *Neurology*, *Ophthalmology*, *Otolaryngology*, *Pathology*, and *Surgery*.

American Medical Association members who are exempt from the payment of dues will receive the *A.M.A. News* without charge. All other publications may be ordered at 50 per cent of the regular rate. The regular rate for the *Journal of the American Medical Association* is \$15 a year, \$23 for two years; *Today's Health* is \$4 a year, \$6 for two years. Each of the ten specialty journals costs \$8 a year, \$12 for two years. The dues exempt members may order any number of the above publications at one-half the figure listed in this paragraph.

Correspondence in reference to any of these publications may be addressed to Mr. Robert A. Enlow, Director, Circulation and Records Department, American Medical Association, 535 North Dearborn Street, Chicago 10, Illinois.

C.P.C.

(Continued from page 236)

ning the treatment early. For this reason we are always obliged to suspect the disease, put the patient on INH and wait to let the more esoteric things fall into line.

Dr. Delp: We had here an aged Negro man who presented himself with a history and physical findings clearly indicative of a classical picture of an organic brain syndrome, and not much of anything else except some very dramatic cerebrospinal fluid findings, an elevated C.S.F. white count, a high lymphocyte partition, an extremely high protein, and, most dramatically, an extremely low sugar. This should have suggested a subacute or chronic type of meningitis. The differential diagnosis has been gone into rather well by a number of people. I have been saying for several years that clinicians should perhaps not be so concerned with the fund of information that junior and senior students have as they are concerned with other intellectual attitudes and other skills that they might acquire. Not too seriously I would like to suggest that perhaps the difficulty in solving this problem

was the result of the fact that our brains were stuffed with thousands of little bits and pieces of information that made us overlook a perfectly classical case of tuberculous meningitis.

Pathological Anatomical Diagnosis

Tuberculous meningitis.

Fibrocaceous tuberculosis of both lungs, adrenal glands, bone marrow, mesenteric, parapancreatic, para-aortic and portahepatic lymph nodes.

Pulmonary edema and congestion, bilateral.

Bronchopneumonia with microabscesses.

References

1. Brain, Sir Russell: Diseases of the Nervous System, 5th edition, pp. 382-383, Oxford University Press, London-New York-Toronto, 1955.
2. Rich, A. R. and McCordock, H. A.: The pathogenesis of tuberculous meningitis. *Gull. J. Hopkins Hosp.* 52, 5, 1933.
3. Knight, Eric: This Above All. pp. 473. Harper and Brothers Publishers, New York-London, 1941.

NEW MEMBERS

The JOURNAL takes this opportunity to welcome these new members into the Kansas Medical Society.

Daniel L. Azarnoff, M.D.
Kansas University Medical
Center
Kansas City 3, Kansas

Lester D. Bowles, M.D.
815 West 5th Street
Wamego, Kansas

Caroline C. Brown, M.D.
619 Ann Avenue
Kansas City, Kansas

Floyd M. Colip, M.D.
104 North State Street
Norton, Kansas

George L. Curran, M.D.
Kansas University Medical
Center
Kansas City 3, Kansas

John J. Foote, M.D.
The Hertzler Clinic
Halstead, Kansas

Marvin R. Gunn, M.D.
737 East Crawford
Salina, Kansas

Alfred Heasty, M.D.
2200 Gage Boulevard
Topeka, Kansas

Claude A. Hendrix, M.D.
Student Health Center
Kansas State University
Manhattan, Kansas

Orren W. Hyman, M.D.
St. Thomas Hospital
Colby, Kansas

J. Luis Ibarra, M.D.
123 North Atchison
El Dorado, Kansas

Walter Lewin, M.D.
Prairie View Hospital
Newton, Kansas

Charles E. Lewis, M.D.
Kansas University Medical
Center
Kansas City 3, Kansas

Daniel McKillop, M.D.
103½ East 9th Street
Winfield, Kansas

Alice W. Patterson, M.D.
804 Carroll
Larned, Kansas

Arthur J. Revell, M.D.
1900 East 23rd Street
Topeka, Kansas

Ernest H. Rieger, M.D.
3333 East Central
Wichita 8, Kansas

Corbin E. Robison, M.D.
Hillcrest Medical Center
Lawrence, Kansas

Kermit G. Wedel, M.D.
Minneapolis Clinic
Minneapolis, Kansas



Physicians Study Service Concepts at Blue Shield Symposium

Should Blue Shield and doctors work harder to design service benefit programs of expanded scope? Is this the answer to securing renewed public support at a time when it is badly needed?

These and related questions emerged as the central theme of the Blue Shield Symposium attended by more than 60 Kansas physicians at Wichita's Allis Hotel on March 2-3. Those attending heard speakers explain various aspects of Blue Shield's relationship to organized medicine and analyze present problems facing health care prepayment that are of mutual concern to Blue Shield and Medicine. Discussion periods followed speech sessions in which many viewpoints were explored.

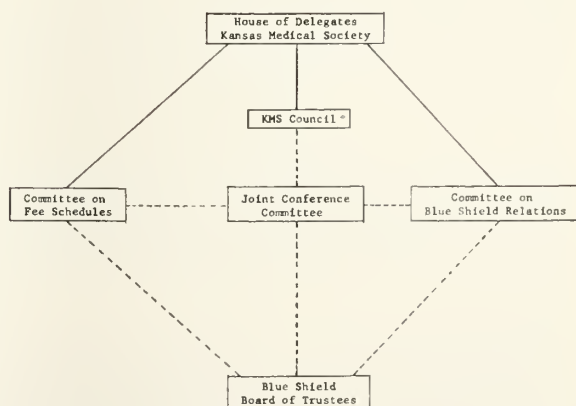
Guests included physicians representing the Kansas Medical Society's Committees on Fee Schedules and Blue Shield Relations, Councilors, Blue Cross-Blue Shield Board Members and members of other Blue Shield committees as well as representatives from many local medical societies. Qualified speakers—both physicians and lay—were persons with expert backgrounds associated with voluntary prepayment or organized medical groups. The gist of what transpired follows:

Blue Shield's Relationship to Medicine Clarified

Remarks by Mr. Oliver Ebel, Executive Secretary of Kansas Medical Society, and Dr. Norton Francis, present State Society President, dealt with this subject.

That Blue Shield was Medicine's own instrument for preserving voluntary medical care as part of free enterprise and that it is the profession's chief method of assuring people of the middle and lower economic classes that their needs could be adequately prepaid through the service benefit programs of Blue Shield were emphasized by Mr. Ebel, as he reviewed the Plan's history from its establishment to date. "Blue Shield represents the best organ through which Medicine in Kansas can realize its goals in respect to health care prepayment. It was organized to serve the State Society. Its function is to be subsidiary to the Society's wishes and this relationship has not changed since

the Plan's inception." These remarks summarized the basis of Dr. Francis' remarks on the relationship of Blue Shield to Kansas Medical Society. Dr. Francis illustrated this relationship by the chart shown below:



Broader Service Benefit Approach Evaluated

Whether philosophically desirable or not, the public is service oriented and it appears inevitable that their demands for service programs will be satisfied by some agency. This thought was introduced in the Sunday session by Dr. Donald Stubbs of Washington, D. C., a member of the Board of the National Association of Blue Shield Plans. Going on, Dr. Stubbs pointed out that this agency will likely be Government in the absence of Blue Shield and Medicine providing an acceptable alternative. He concluded by pointing out that physicians not only need to work more closely with their state Blue Shield Plans in developing local service programs but that they also should give serious consideration to national efforts to design service benefit plans for inter-state organizations.

Dr. Stubbs was preceded by Topeka's Dr. Henry Blake, chairman of the Board of the National Association of Blue Shield Plans. Dr. Blake's remarks also emphasized the importance of a broad service philosophy to Medicine and illustrated the practical necessity for the profession to face the immediate need for action on better voluntary prepayment programs through Blue Shield which would feature high level service benefit arrangements.

Industry and labor's viewpoints regarding service benefits were explained by Mr. W. R. Breher of Detroit, Michigan. Mr. Breher, who handles Ford Motor Company's insurance negotiations and who has close contact with current labor and management thinking, echoed earlier comments in respect to public desire for plans with high predictability of coverage. Mentioning that industry and labor continue to look first to Blue Shield for the satisfaction of their health care needs, he cautioned that Blue Shield's failure to deliver will result in attempts to secure such prepaid programs from other sources less directly related to the medical profession.

The Physician's Individual Responsibility Defined

Speaking from the individual physician's point of view, Dr. Ira Layton—president of Kansas City, Missouri, Blue Shield—assessed what is at stake for the doctor himself as he considers accepting the principle of expanded service benefits. Dr. Layton examined practicalities associated with the service philosophy.

Fees are fixed by the medical economics of a locality, not the agency sponsoring a service benefit plan, he observed.

Proceeding, Dr. Layton showed that a service plan is unlikely to be used as a "socializing vehicle" by government while they now possess such machinery as Medicare and the Federal Employees Program

which are nationwide in scope. That public support for Medicine is stronger where the doctors have implemented an adequate prepayment plan was reviewed as well as the fact that the alleged individual loss of freedom under a Blue Shield service approach is negligible when doctors exercise the controls available under their local Plan's structure.

Dr. Layton concluded with the request that physicians carefully weigh the realistic advantages of a strong Blue Shield organization as contrasted to the probable effects of continued opposition to proposed plans without positive alternatives.

Types of Service Approaches Discussed

As examples of service benefit plans that can be implemented with the cooperation of physicians, several speakers presented both local and out-of-state approaches. Dr. G. E. Kassebaum of El Dorado and Dr. R. J. Sohlberg, Jr., of McPherson described the Kansas Blue Shield Schedule 3 program which has been approved in 68 Kansas counties to date. Mr. Ed Stockly of Los Alamos, New Mexico, who is a trustee on the New Mexico Blue Shield Board told of that state's recent move to service benefits as opposed to indemnity payments.

Another—non-Blue Shield—effort toward securing service benefits was the subject of remarks by Dr. L. J. Snyder of Fresno, California. As president of the Western Foundations, Dr. Snyder explained the foundation programs of California. Information that only 10 per cent of the population was served by these plans and that costs were increasing beyond Blue Shield levels was received with a great deal of interest by the group.

The Symposium closed with open discussion. No consensus or group opinion was sought. The purpose of the meeting was to provide availability of information from qualified sources concerning the important aspects of how far Medicine, and Blue Shield, need to go in order to safeguard the present voluntary system of financing health care. Guests were left to the formulation of their own personal insights drawn from the facts presented. It is hoped that those attending will share their impressions of the Symposium through reports to their local Medical Societies.

A fool often fails because he thinks what is difficult is easy, and a wise man because he thinks what is easy is difficult.—*John Churton Collins*

Traffic violations can be blamed for 2,600,000 injuries and more than 30,000 deaths on our highways during 1960.



Personalities—IN KANSAS MEDICINE

Galen Fields, Scott City, was elected president of the Kansas Obstetrical Society at the group's annual meeting in Wichita in March. The new vice president is **Jack C. Schroll** of Hutchinson. **David E. Gray**, Topeka, is the retiring president.

Leonard F. Peltier, K.U. Medical Center, was visiting professor of orthopedic surgery at the University of Florida, Gainesville, in January.

Karl M. Neudorfer, Wichita, was recently named a Diplomate of the American Board of Pathology.

Two Newton physicians spoke at a community council meeting sponsored by the Harvey County Heart Association in March. **Charles Sills** spoke on the causes of heart trouble and **Frances Allen** told of a study of rheumatic fever in a local family group.

Ralph E. Bula of the Eddy Clinic in Hays, was promoted to active fellowship in the American College of Allergists at their meeting in March in New York City.

Free diagnostic clinics for crippled children were held at Pratt and Belleville during April. **Cline D. Hensley, Jr.** and **H. O. Marsh**, both of Wichita, conducted the clinic at Pratt. **Spencer McCrae**, Salina, and **G. Bernard Joyce**, Topeka, were in charge of the Belleville clinic.

Evalyn S. Gendel, assistant director of the State

Health Department's maternal and child health division, was recently appointed to the program planning committee for the American School Health Association. In March, Dr. Gendel opened a series of five lectures on "Male and Female" at Kansas State University in Manhattan.

The American Academy of General Practice elected **George E. Burket, Jr.**, Kingman, to the Board of Directors. Only three men are elected each year to the Board, and Dr. Burket is the first member from Kansas to be elected to the position.

Otto H. Ravenholt, health officer and director of the Topeka-Shawnee County Health Department, has accepted the position of lecturer in preventive medicine and community health at the University of Kansas Medical Center.

Condon T. Hagan, Wichita, served as a delegate to the national convention of the American Society of Internal Medicine. The convention was held in Denver during the last of March.

Farris D. Evans, Wichita, recently attended a conference for national officers of Veterans of Foreign Wars in Washington, D. C. Dr. Evans serves as chairman of the National Hospital Committee.

The city of Lawrence honored **H. Penfield Jones** for 30 years of service at a reception in March.



Along The BOOKSHELF

Stormont Medical Library

RECENT ACQUISITIONS

- Goldston, Iage. On the utility of medical history Monograph I. Int. Univ. Pr. '57.
- Marti-Ibanez, F. Men, molds and history. M. D. Pub., 1958.
- Maebarger, J. Space medicine, the human factor. Un. of Illinois, 1951.
- Galloway, Thomas. Treatment of respiratory emergencies. Thomas, 1953.
- Boyd, William. Immunochemical specificity. Interscience, 1962.
- Heymans, Corneille. Regulation of blood pressure and heart rate. Thomas, 1950.
- Kountz, William. Thyroid function and its possible role in vascular degenerating. Thomas, 1951.
- Chertok, L. Psychosomatic methods in painless childbirth. Permagon Pr., '59.
- Basowitz, Harold. Anxiety and stress. McGraw-Hill, 1955.
- Walker, Harry. Physical diagnosis. Mosby, 1952.

MONOGRAPHS AVAILABLE IN THE LIBRARY

Nervous System (con't)

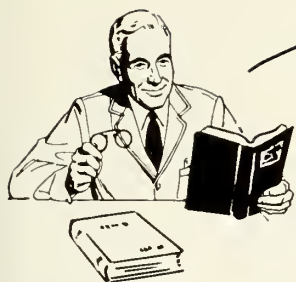
- Abrahamson, Isador. Lethargic encephalitis. New York, 1935.
- Hess, George. Living at your best with multiple sclerosis; a handbook for patients. Thomas, 1962.
- Huber, Alfred. Eye symptoms in brain tumors, with a foreword by H. Krayenbuhl. Translated by Stefan Van Wien. Mosby, 1961.
- Cooper, Irvins. Parkinsonism: its medical and surgical therapy. Thomas, 1961.
- Faber, Harold. The pathogenesis of poliomyelitis. Thomas, 1955.
- Fischel, Mrs. Marguerite K. The spastic child. Mosby, 1934.

- Habel, Karl. Biology of poliomyelitis. New York Academy of Science, 1955.
- Jonez, Hinton. My fight to conquer multiple sclerosis. Messner, 1952.
- McAlpine, Douglas. Multiple sclerosis. Williams & Wilkins, 1955.
- Schmorl, Georg. The human spine in health and disease; anatomicopathologic studies; clinicoradiologic aspects by Herbert Junghanne, 1st American ed. Grune & Stratton, 1959.
- Ciba Symposia. Shock: pathogenesis and therapy; an international symposium. Springer-Verlag, 1962.
- Tulane University of Louisiana. Studies in schizophrenia; a multidisciplinary approach to mind-brain relationships. Harvard Univ. Press, 1954.
- Wechsler, Israel. Textbook of clinical neurology, 8th ed. Saunders, 1958.
- Wiener, Norbert. Cybernetics; or control and communication in the animal and machine. J. Wiley, 1948.
- Yearbook of neurology, psychiatry and endocrinology, 1960-61. Yearbook, 1960.

Announcement: Stormont Medical Library now has facilities to furnish Xerox service, upon request, at 5c per page.

Books and periodicals will be sent anywhere in the state. You pay only the postage, four cents for the first pound and one cent for each additional pound. Address requests to:

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Book REVIEWS

EARLY DETECTION AND DIAGNOSIS OF CANCER, Walter E. O'Donnell, M.D.; Emerson Day, M.D., and Louis Venet, M.D. C. V. Mosby Company, St. Louis, 1962. 286 pages illustrated. \$12.00.

This compact, durably-bound book, printed on good paper, is 286 pages of legible outline with clear illustrations and photographs, which adheres to its title in its attempt to assist the practitioners and others engaged in cancer control. The authoritative guidelines are simple and concise. It is well recognized that the first physician to see the patient is first in the line of defense against cancer, which is becoming an increasingly frequent cause of disability and death. Essential facts are given, along with a description of how to look for and diagnose cancer in the physician's office, giving clearly what to do about it initially. No attempt is made to provide a definitive reference on the subject of cancer or its ramifications. The chapters are in semi-outline form, describing anatomic sites of cancer. These may be read comprehensively as a separate subject, or in concert with other chapters.

This book should be particularly helpful to physicians who have patients coming to them with few or no symptoms, asking for a "checkup." When used for this purpose, the information contained in this well-printed volume will be found to strike a reasonable balance between effort and yield. The book properly emphasizes cancer which is common or accessible, background and details in selected areas, important drawings and visual aids. The book does not contain a voluminous bibliography, controversial arguments, unnecessary details of pathology, minutiae of x-ray diagnosis and exhaustive differential diagnosis, principles of treatment, or matters of prognosis which would have detracted immeasurably from the workable, concise, readable nature of the book. Evidently, the authors have had pertinent assistance of scores of outstanding cancer specialists from the Memorial-Sloan-Kettering Cancer Center. The material is current and highly recommended to all practicing physicians.—*N.V.T.*

DOCTORS, PATIENTS AND HEALTH INSURANCE, Herman Miles Somers and Anne Ramsey Somers. Doubleday & Company, New York. 544 pages. \$1.95.

This book should be, but probably is not, one of general interest to physicians; it is a semi-detailed compilation of descriptions and statistics of the various insuring and prepayment mechanisms and of the problem of financing of the cost of medical care. Much of the analysis and appraisal is typical of the "professorial" viewpoint which is not necessarily practical, workable or desirable.

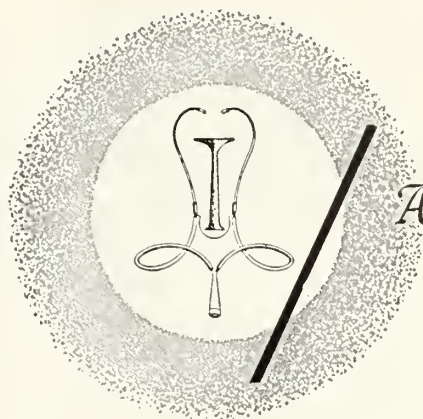
They describe the changing character of medical practice and state that "if today's critics are correct" it can only be concluded that the image of the traditional doctor-patient relationship is not only inaccurate but that it has lost most of its beneficent value.

A chapter is devoted to the problem of the aged in which the authors conclude that the evidence indicates that "the aged cannot pay the full cost of adequate coverage" and that the coverage that they can afford to buy offers very little protection.

Separate chapters are allocated to Blue Cross, Blue Shield, private insurance companies and "Costs and Controls."

The authors present divergent opinions on controversial subjects but their editorializing and manner of presentation leaves little doubt that they are building a case for more control of hospital usage as well as professional services. They believe that it would be disastrous to wait for a "perfect" or a "painless" form of control. "The issue may no longer be regulation versus laissez faire but regulation versus public opinion."

While *Doctors, Patients and Health Insurance* offers little that is new, nevertheless the problems of the financing of health care are of such a magnitude that it is worthwhile for doctors to read it—if only "to see themselves as others see them."—*H.S.B.*



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the DOCTOR'S CALENDAR. Notice of the session is posted in advance to allow the physician time to make preparations.

MAY

- May 21-25 American Association on Mental Deficiencies, Portland, Oregon. Contact: Dr. Neil A. Dayton, 1601 W. Broad St., Columbus, Ohio.
- May 23 14th annual Dr. F. G. Thompson, Sr. Lectureship, Clinic Building, 902 Edmond St., St. Joseph, Missouri. Dr. Jan H. Tillsch, Mayo Clinic, will speak on "Contributions of the Aerospace Age to Medicine."

JUNE

- June 10-12 *Neurology, Neurologic Surgery*—American Neurological Association, Atlantic City, New Jersey. Contact: Melvin D. Yahr, M.D., 710 West 168th Street, New York 32, N. Y.
- June 13-17 Twenty-ninth annual meeting of the American College of Chest Physicians, Atlantic City, New Jersey. Contact: Murray Kornfeld, Exec. Dir., 112 East Chestnut Street, Chicago, Ill.
- June 16-20 *Dermatology*—The Society for Investigative Dermatology, Atlantic City, New Jersey. Contact: Herman Beerman, M.D., 255 South 17th Street, Philadelphia, Pa.

JULY

- July 15-19 Second International Conference on Congenital Malformations, New York City. Sponsored by The National Foundation-March of Dimes. Contact: Stanley E. Henwood, 120 Broadway, New York 5, N. Y.

POSTGRADUATE COURSES

- May 20-23 *Surgery*—University of Kansas School of Medicine.

- May 20-24 *Physiological Aspects of Cardiopulmonary Disease*—Indiana University Medical Center, Indianapolis, Indiana. Sponsored by the American College Physicians.

- May 21 *Practical Aids in Diagnosis of Hemorrhagic Disorders*—Northwest Missouri Chapter of the Academy of General Practice and the University of Kansas School of Medicine. Contact: John P. Mabrey, M.D., Plattsburg, Mo.

- May 23-24 13th Annual Colorado Intern-Resident Clinic, University of Colorado Medical Center, Denver, Colo.

- June 3-7 *Internal Medicine: Current Physiological Concepts in Diagnosis and Treatment*—University of Cincinnati College of Medicine. Sponsored by the American College of Physicians. Contact: E. C. Rosenow, Jr., M.D., 4200 Pine Street, Philadelphia, Pa.

- June 3-21 Forty-sixth session of the Trudeau School of Tuberculosis and Other Pulmonary Diseases, Saranac Lake, New York. Conducted under the auspices of the Trudeau Foundation. Contact: Secretary, Trudeau School of Tuberculosis and Other Pulmonary Diseases, Box 670, Saranac Lake, N. Y.

- June 10-14 *Current Topics in Internal Medicine*—State University of Iowa Department of Medicine, Iowa City, Iowa. Contact: E. C. Rosenow, Jr., M.D., American College of Physicians, 4200 Pine Street, Philadelphia, Pa.

- June 24-28 *The Psychosomatic Illness*—University of Colorado Medical Center, Denver, Colorado. Contact: E. C. Rosenow, Jr., M.D., American College of Physicians, 4200 Pine Street, Philadelphia, Pa.



PAUL C. CARSON, M.D.

Paul C. Carson, Wichita, died March 25, 1963, at the age of 75 years.

Dr. Carson was born March 28, 1887, at Ashland. He was a graduate of the University of Kansas and Western Reserve University of Medicine, Cleveland, Ohio. Following his internship at Boston Children's Hospital and Boston Floating Hospital, he served in World War I as a Major in the Medical Corps. After his discharge he received specialized training in pediatrics at Harvard Medical School. He practiced briefly in Ashland, moving to Wichita in 1921 where he continued to practice until his retirement.

He was a member of the Presbyterian church, Ashland Masonic Lodge and the Wichita Rotary Club. Dr. Carson was one of the founders of the Kansas Society for Crippled Children.

Dr. Carson is survived by a brother and sister.

W. F. COON, M.D.

William F. Coon, 87, died in Caney Municipal Hospital on March 30, 1963. He had resided in Caney for 54 years.

Born September 20, 1875, at Eau Claire, Wisconsin, Dr. Coon received his degree in medicine from the University of Minnesota Medical School in Minneapolis in 1903. He established his practice in Caney in 1909. For many years he and the late Dr. T. A. Stevens operated a hospital in Caney.

He was a member of the Presbyterian church, a life member of Caney Lodge 324 AF&AM, the Wichita Consistory, Mirza Shrine and had served as master of Elysian Lodge 222, AF&AM, Elysian, Minnesota.

Dr. Coon is survived by a niece, his wife and daughter having preceded him in death.

HAROLD E. NEPTUNE, M.D.

Harold E. Neptune, longtime Salina physician, died March 29, 1963, at St. John's Hospital in Salina. He was 67 years old.

Dr. Neptune was born May 22, 1895, at Chapman and had been a Salina resident since 1898. He attended Kansas Wesleyan University and was graduated from the Rush Medical School, Chicago, in 1920. He interned at the Christian Church Hospital, Kansas City, Missouri.

He was a member of Salina Elks Lodge 718, the American Legion, Salina Lodge 60 of the Ancient Free and Accepted Masons, Salina Consistory 32, Isis Temple Shrine and several medical fraternities.

He is survived by his wife, Ada.

KANSAS STATE BOARD OF HEALTH

TOPEKA, KANSAS

Division of Preventable Diseases—Division of Vital Statistics—Kansas Morbidity Incidence
Summary of Cases Reported in January, 1963 and 1962

<i>Diseases</i>	<i>1963 January</i>	<i>1962 January</i>	<i>January 5-Year Median 1958-1962</i>
Amebiasis	2	4	4
Aseptic meningitis	—	4	*
Brucellosis	—	4	4
Cancer	294	301	309
Diphtheria	—	—	—
Encephalitis, infectious	1	2	2
Gonorrhea	266	200	204
Hepatitis, infectious	27	88	38
Meningitis, meningococcal	—	2	2
Pertussis	16	—	4
Poliomyelitis	—	—	—
Rheumatic fever	—	—	—
Salmonellosis	14	3	4
Scarlet fever	44	112	70
Shigellosis	9	2	3
Streptococcal infections	151	180	180
Syphilis	84	146	136
Tinea capitis	12	37	37
Tuberculosis	30	20	29
Tularemia	1	1	2
Typhoid fever	—	—	1

* Statistics on 5-year median not available

INCREASING NEED FOR SMALLPOX PROTECTION

America's protection against smallpox has reached a "dangerous low," the American Medical Association has warned. In a statement adopted by the House of Delegates, physicians and the public have been urged to reverse "the declining immunization level against smallpox." Maintenance of protection against this serious epidemic disease requires revaccination at five-year intervals.

"A growing amount of international travel, at increasing speeds, to and from areas of the world in which smallpox is prevalent, persistently threatens to introduce the disease into the United States. Recent outbreaks in other Western nations emphasize the need for attention to this problem.

"The American Medical Association, in the interests of national safety, urges physicians and their patients, particularly those who may be in contact with possible carriers, to maintain the needed protection against smallpox."



Wound Healing

The Relationship of Wound Infections to Non-Infected Wound Complications

**T. C. KING, M.D., J. M. ZIMMERMAN, M.D., and
A. G. RAMOS, M.D.,*** *Kansas City, Kansas*

A BRIEF REVIEW of the British and American medical literature of the past decade reveals the intense interest that has been present regarding the ecology of bacteria in the hospital. Numerous and extensive studies have examined almost all conceivable vectors of bacterial contamination. Investigations have clarified the roles played by the noses, nails and perineum of the personnel, as well as the floors, fomites and airflow patterns. Elaborate protocols in techniques have been devised to alter contamination by controlling traffic, frequency of operating room use, the chemical and mechanical preparation of floors, surgeons' hands and operative fields. Conclusive, or even good evidence of a relationship between these various sources of contamination and wound infection rates has been surprisingly hard to come by. As a matter of fact, Barnes has shown that when comparable procedures are evaluated, the infection rate remains quite stable through most of the era of investigation, activity and reform in this area of concern about external causes of wound infection.

A careful study of all instances of operative wounds healing in anything short of an "ideal course" supports the long-known, but often forgotten idea, that wound infection is directly related to wound care. Antibiotics are still no substitute for good surgical technique.

Prior to the introduction of antibiotics into clinical surgery, evidence had accumulated suggesting the importance of the soil rather than the seed. It is the purpose of this paper, in redirecting our attention to factors other than bacterial environment, to identify the relationship between wound infections and some factors over which the surgeon has immediate control; and to offer some hypotheses as to the probable implications of this association.

There is important confusion which makes comparisons between most previous studies relating to this problem quite difficult. This is brought about by wide and usually unstated differences in the techniques various authors have utilized for accumulating information about their "complications" and the flexible or ill-defined criteria applied in determining what

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Presented at the annual meeting of the Kansas Chapter of the American College of Surgeons, September, 1962, Dodge City, Kansas.

constitutes an "infection." Some reports have included as "infected cases" only those in which laboratory proof of an infecting organism was obtained, whatever the appearance of the wound. Others have accepted as complications only those problems which clearly altered hospital bed occupancy or required specific corrective therapy. We feel it imperative, therefore, that a clear statement of operational definitions be made along with a sketch of the procedure by which data are accumulated.

Operational Definitions

1. *Infection*—We have considered any wound which forms pus in any recognizable quantity to be an infected wound. This is a clinical, not a bacteriological diagnosis and includes in the extreme those wounds with a droplet of purulent material in a small pustule around skin suture material. We have not required laboratory bacteriological confirmation of the diagnosis.

2. *Wound Complication*—Any wound which has deviated from the ideal course for a postoperative healing wound has been included in this category. This includes all wounds with visible induration, inflammation, ecchymosis, hematoma, seroma, or any degree of wound separation. We have included such things as skin grafts with anything less than 100 per cent take.

3. *Clean Case*—We have considered all operative wounds which have not suffered gross intraoperative contamination nor been grossly infected at the time of surgery to fit into this category. Included in this group are cases involving granulating burn surfaces, elective surgery on the bowel (with or without bowel prep), and resection of pulmonary abscess where intraoperative disruption of the abscessed compartment did not occur.

4. *Infection Rate*—The ratio between infections and clean non-endoscopic operative cases.

5. *Complication Rate*—The ratio between complications and all non-endoscopic operative cases.

Collection of Data

Ours is a teaching hospital in which 90 per cent of the surgical procedures are performed by residents-in-training. One of the junior assistant residents is assigned the job of "detective" and makes a regular review of all postoperative patients looking for any deviation from the ideal postoperative course. An abstract of the relevant information is prepared and, at a weekly conference, the entire senior and house staff review and discuss together this "morbidity and mortality" list. With this as the primary source, certain other safeguards are carried out:

1. The nursing personnel on each service prepare an

"infection report" on any patient in whom they recognize any possibility of infection (these have included foot blisters and ingrown hairs!) and these are then individually inspected by a staff surgeon.

2. All positive cultures from any source in surgical patients are reported by the laboratory service to the surgical office. The source of the cultured material is reviewed by a staff surgeon.

3. The supervising staff surgeons in their regular rounds on each ward make note of any complications. We have uniformly found the "detective" resident's list to be a fairly reliable source of complication and infection information.

Presentation of Data

This is a retrospective study of the 23 months from October, 1960, to August, 1962, and Table 1 is a tabulation of the relevant data. Figure 1 represents the comparative rates of infection and complications observed during the study period. Here it will be noted

TABLE 1

Month	Operations	"Clean" Operations	Comp. Rate (%)	Inf. Rate (%)
Oct.	148	126	2.7	0.8
Nov.	165	128	3.0	0.8
Dec.	163	133	4.2	1.5
Jan.	182	145	4.2	0.7
Feb.	169	135	6.5	0.8
March	195	156	3.2	2.4
April	197	158	11.7	3.4
May	197	160	3.2	0.8
June	183	146	2.8	2.1
July	253	202	6.6	3.0
Aug.	250	200	3.7	1.0
Sept.	231	185	3.0	2.8
Oct.	265	212	5.6	4.6
Nov.	213	171	4.6	1.2
Dec.	178	143	2.9	1.1
Jan.	214	171	1.4	1.7
Feb.	171	137	2.9	1.5
March	226	181	3.2	0.6
April	218	174	2.3	1.2
May	187	150	5.4	3.3
June	185	148	2.2	1.4
July	216	173	7.4	4.1
Aug.	207	165	1.9	1.2

Means 201 ± 30 161 ± 24 4.1 ± 2.2 1.8 ± 1.1

Coefficient of Correlation

$$r = \frac{n\sum xy - (\sum x)(\sum y)}{[\sum x^2 - (\sum x)^2]^{1/2} [\sum y^2 - (\sum y)^2]^{1/2}} = 0.46$$

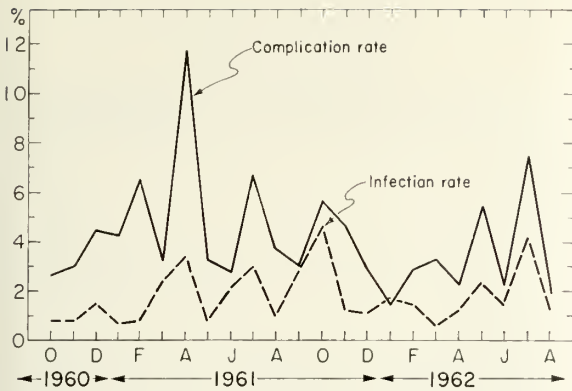


Figure 1. The relationship of wound infections to non-infected wound complications.

that sharp peaks in both rates coincide during April, July and October of 1960 and May and July of 1962. The coefficient of correlation between the two variables over the 23 month period is 0.46 which provides a probability value of 0.025. (The odds are 40 to 1 that this is not a chance relationship.)

Table 2 demonstrates the interesting difference in both rates when the peak five months are separated from the remaining eighteen. We feel the peaks that appear in these months are related to identifiable local factors such as the assumption of increased responsibility by less experienced house officers due to promotion into their senior year (i.e., both July groups) or illness or absence of the senior resident. Statistical evaluation of these data revealed odds of 1000 to 1 that these differences would not have occurred by chance alone.

Discussion

Homans has been quoted⁷ as writing "In surgery as in every other art, fundamental matters are perennially being discovered, discredited, forgotten, rediscovered, and reaffirmed." The reaffirmation of the priority of wound care in the prevention and control of wound infections seems, in the light of recent heavy emphasis in the surgical literature on other factors, to be overdue. We have interpreted the data reported in this study as providing a reaffirmation of some principles enunciated 400 years ago by Ambrose Paré, restated a century ago by Baron Larry and Theodore Billroth,

and many times since then by other thoughtful workers; and that they support the concepts developed over the last decade in the interesting experimental work of A. A. Miles,^{3, 4, 5, 6} S. D. Elek,² as well as others. We believe a review of these works warrant the following assertions as basic assumptions:

1. Bacteria are a necessary but not a sufficient cause for wound infections.

2. Nature abhors an ecologic vacuum: we cannot eradicate the bacterial population of our environment, we can only modify it.

3. The predominant infecting organisms in wounds today are endemic not epidemic organisms. They are virtually omnipresent as contaminating agents.

4. The metamorphosis from contamination to infection is predominantly the consequence of iatrogenic alterations in local host defense systems: dead space, dead tissue, hematoma, foreign body.

That is to say that bacteria alone do not cause wound infections, that we must always operate in a more or less bacterially contaminated environment and that the factors which allow this bacterial contamination to develop into wound infections are almost exclusively in the control of the operating surgeon. We believe our data supports these assertions, in that as evidences of less than ideal wound care appear (as manifested by the non-infected wound complication rate), then also does the wound infection rate increase. We have concluded that the most immediate and practical step for a surgeon to take to control his wound infections is to re-examine his handling of tissue toward the goal of rigorous elimination of needless dead space, dead tissue or foreign matter; and reaffirmation of their faith in the superb antibacterial defenses of intact host defense mechanisms.

References

1. Barnes, B. A., et al.: Surgical Sepsis: Impressions and Facts, Surg. 46:247-259, 1959.
2. Elek, S. D., and Conen, P. E.: The Virulence of *Staphylococcus Pyogenes* for Man. A Study of the Problems of Wound Infection, Brit. J. Exper. Path. 38:573, 1957.
3. Evans, D. G., Miles, A. A., and Niven, J. S. F.: Enhancement of Bacterial Infections by Adrenaline, Brit. J. Exper. Path. 29:20, 1948.
4. Miles, A. A.: Nonspecific Defense Reactions in Bacterial Infections, Ann. New York Acad. Sc. 66:356, 1956.

(Continued on page 264)

TABLE 2

	April '60, July '60, '61 May '60, Oct. '60	Other 18 Months Oct. '60 to Aug. '62	$t = \frac{\bar{X}_1 - \bar{X}_2}{[\sigma_1^2/n_1 + \sigma_2^2/n_2]^{1/2}}$	P
Mean Comp. Rate (%)	7.34 ± 2.3	3.27 ± 1.1	3.84	< .001
Mean Inf. Rate (%)	3.7 ± 0.6	1.3 ± 0.6	7.91	<< .001

Subcapital Fracture

Hip Prostheses—A Follow-Up

WENDELL A. GROSJEAN, M.D., F.A.C.S.,* *Winfield*

IN 1954 I PRESENTED a paper at the annual meeting of this organization in Salina, the subject of which was fractures of the hip. It was stressed that in years past almost all hip fractures were cared for by the orthopedist but that now most general surgeons, particularly those in the smaller communities, are obliged to treat a large share of them because of the great increase in incidence due to our aging population. Our figures showed an increase of 140 per cent in hip fractures in ten years, in an area with a relatively static population.

Included in the above discussion was a preliminary report on the use of the prostheses as definitive treatment in fresh displaced subcapital fractures. The series was rather small and this method of treatment had been used for only two years. I, therefore, thought it would be appropriate to give an additional report inasmuch as the series has grown larger and the follow-up period much longer.

As you know, the incidence of non-union following conventional nailing, even in the best of hands, is high. Most of these elderly patients have a rather limited life expectancy in any event, and much of their allotted time will be spent waiting to see whether healing is going to occur. This may mean six to twelve months of wheel chair existence. Such inactivity may not only contribute frequently to various complications, but will also increase the work load of relatives and others who are called on to care for the patient during his convalescent period. If union does occur, a disappointed number will suffer the pain of avascular necrosis at a later date and this will require further treatment. It might be said that most of these patients simply do not have the time to wait to see whether they are going to have a satisfactory weight bearing limb.

In view of this rather gloomy outlook for the increasing number of oldsters who will sustain subcapital fractures, our conclusions when the preliminary report was given was that any method which would allow the patient to walk almost immediately with a reasonably good weight bearing extremity, and

a satisfactory mortality rate should be given a good clinical trial.

We have now had ten years experience with the replacement prostheses and believe that with reasonable selection of cases, the necessary criteria are met and that in general it is a superior method of treating the displaced subcapital fractures in the elderly.

A brief follow-up of patients who had femoral prostheses for the treatment of subcapital fractures of the femur ten years or more before, and a consideration of the selection of patients best suited for this type of treatment.

This report covers the ten year period from August, 1952 to August, 1962. During this time we have placed 82 prostheses, 76 of them being used for fresh displaced fractures as a definitive procedure, and five were used as a secondary operation where nailing had failed. One was used for a patient disabled by Legg-Perthes disease.

The device used has been a Fred Thompson endoprosthesis in each instance and the approach to the hip joint has invariably been anterior. We do not use external immobilization of any kind and all patients, barring complications, are walking by their seventh postoperative day. The average age of the private patients in the fresh fracture group was approximately 82 years. The youngest was 59, a patient with multiple sclerosis who had palsied upper extremities, and the oldest was 92, of which there were three. Eighty-two per cent were women.

Figure 1 shows the age distributions. It should be noted that over half of the private patients (the five State Training School patients whose ages are not definite are not included) were 80 years or over. Three of the 80 or over group had bilateral replacements, one of whom had her first fracture treated elsewhere.

The medical problems involved, and they are multiple more often than not, are amazing, running the gamut of the pathology text, but the degenerative diseases quite naturally predominate. Three of our pa-

* From the surgical service of the Snyder Clinic Association.

Presented at the annual meeting of the Kansas Chapter of the American College of Surgeons, September, 1962, Dodge City, Kansas.

AGE DISTRIBUTION FRESH FRACTURES

<i>Ages (Private)</i>	<i>Number</i>
59-69	11
70-79	24
80-89	33
90-92	3
S.T.S. Pts. (Ages?)	5
	—
	76

Figure 1

HOSPITAL DEATHS

<i>Patient</i>	<i>Age</i>	<i>Days P.O.</i>	<i>Cause</i>
J. T.	85	4	Aspiration pneumonia
M. M.	82	21	Cerebral hemorrhage
L. H.	86	14	Pyelonephritis
C. K.	82	8	Myocardial failure
M. F.	88	48	Pneumonia
J. L.	89	1	Pulmonary embolus
E. S.	67	34	Pulmonary carcinoma

Figure 2

tients were already in the hospital where they fell out of bed, sustaining their fractures. There were two who had pathologic fractures, one metastatic from a pulmonary carcinoma and the other metastatic from a renal tumor which had been removed 15 years previously.

It is impossible to get a meaningful statistic with relation to length of hospital stay because of too many extraneous factors. In general, however, patients with no serious medical problem or surgical complication will be dismissed on their ninth to twelfth postoperative day, provided they have a place to go.

Our surgical complications have included one anterior and one central dislocation, one split shaft and one temporary sciatic palsy. There have been no serious infections.

There have been seven hospital deaths, all of which were in the fresh fracture group. Figure 2 lists the patients and cause of death. All of the hospital deaths, excluding the one who had a pathologic fracture and died of pulmonary carcinoma on her 34th postoperative day, were 82 years of age or over, which is a mortality rate of about 10 per cent in the 80 and over patient. There were, however, in addition to the hospital deaths, three other patients, all of whom were walking at the time they left the hospital, who died within eight weeks after dismissal. Their ages were 85, 86 and 92 and the causes of death were coronary occlusion, uremia and pneumonia, respectively.

In the selection of cases, the fracture, of course, should be displaced and located in the subcapital area; the angle of the fracture can be disregarded. Ordinarily the lower age limit is arbitrarily placed at 65, but there are exceptions. We have one patient in whom the procedure was carried out at her request at age 60. This was done two years ago and she has been playing golf regularly since then. In choosing patients it is important that they are capable of walking at the time of the fracture; otherwise the only excuse for any operative procedure would be for the relief of pain and the more simple nailing procedure should

suffice. We do not fear those with cardiovascular disease, particularly if they are properly handled; otherwise, most of the candidates would be eliminated. Of more importance is the individual with osteoporosis to a severe degree. This is a problem and needs careful evaluation, which should include x-rays of the spine, before a decision is made to use a prosthesis. Our central dislocation occurred in such a patient. The experience and follow-up with pathological fractures is not great enough to draw any conclusions in such cases, but obviously if there is gross involvement of the calcar the procedure will be a failure. If at the time of operation such involvement is noted, perhaps simple removal of the head of the femur, as suggested by Francis *et al.*, at the 1961 meeting of the American Association for the Surgery of Trauma, would be the preferred method of treatment.

(A movie was then presented showing a group of patients carrying on their daily activities as long as seven years after leaving the hospital.)

AUTHOR'S NOTE: Since this paper was presented there have been 14 additional cases without mortality.

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"Staph" and Antibiotics

A Critical Look at Staphylococcal Enterocolitis

J. M. ZIMMERMAN, M.D., T. C. KING, M.D., and
A. G. RAMOS, M.D.,* *Kansas City, Kansas*

STAPHYLOCOCCAL ENTEROCOLITIS, though not a common entity, strikes with sufficient frequency and abruptness to demand an understanding of it by all physicians. The purpose of this article is to review some basic concepts about the disease, to report the experience at the Kansas City Veterans Administration Hospital with eight cases which occurred in a six month period and from these concepts and this experience to indicate certain factors which we feel are of importance for a proper understanding of the disease.

It would first be well to identify clearly the entity which is under consideration. There is some confusion regarding staphylococcal enterocolitis and this has obscured the understanding of various aspects of the disorder. "Pseudomembranous" enterocolitis is supposed by many to be a complication of antibiotic therapy; however, its occurrence was reported prior to the antibiotic era and has been noted in recent years in some patients who have not received antibiotics. While staphylococcal enterocolitis is supposed to be a disease with an explosive onset and a frequently lethal course, staphylococci can be isolated from the stools of many patients with mild gastroenteritis and considerable variation is reported in survival rates. Pathologically proven "pseudomembranous" enterocolitis is seen in which no staphylococci are present in the stool and conversely clinically typical, severe enteritis with numerous staphylococci in the stool is seen in the absence of pseudomembranous changes in the bowel.

Five important and relatively well established points with regard to staphylococcal enterocolitis must be brought into focus if we are to have a sound understanding of the disorder.

1. *Necrotizing or pseudomembranous colitis is a non-specific response of the bowel to a variety of insults.* It is seen in mercury poisoning, pantothenic acid deficiency, uremia and burns; it has been pro-

duced in animals by the infusion of incompatible blood.³ It can be due to infection by a variety of organisms including strongyloides, proteus and staphylococci.

Pseudomembranous colitis is a non-specific response of the bowel to various insults; enterotoxin-producing staphylococcal overgrowth in the bowel is one such insult. The presence of abundant staphylococci on the stool smear or an overgrowth by staphylococci of a stool culture on non-selective media is necessary before the diagnosis of staphylococcal pseudomembranous enterocolitis can be made with certainty. Early diagnosis and early institution of adequate fluid, electrolyte and colloid replacement is the imperative step in management; this is probably more important than antibiotic manipulation, fecal enemas, steroids or other measures.

2. *When staphylococcal enterocolitis, that is clinically severe enteritis associated with an overgrowth of the intestinal tract with staphylococci, occurs it does not invariably produce the pathological picture of necrotizing or pseudomembranous enterocolitis.*

3. *Before a definite diagnosis of staphylococcal enterocolitis can be made with certainty, one must find large numbers of staphylococci on Gram's stain smear or an overgrowth of staphylococci on non-selective media.* In a patient with enteritis the presence of a few staphylococci in a stool culture does not make the diagnosis of staphylococcal enterocolitis. In many patients staphylococci can be isolated from fecal material if selective media are used; these organisms are found in the stool samples of about 15 per cent of the normal population and about 40 per cent of patients with diarrhea. Hinton has shown, however, that the presence of abundant staphylococci on the Gram's stain smear and the presence of over-

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growth of staphylococci on non-selective media is quite consistently associated with the clinical and pathological picture of staphylococcal enterocolitis.² In other words, these criteria are necessary before one can be certain that he is dealing with a case of staphylococcal enterocolitis.

4. *Staphylococcal enterocolitis is probably due in most instances to a reduction in the normal intestinal flora by antibiotics leading to an overgrowth by staphylococci.* This in turn leads to the production of enterotoxin which produces the clinical and pathological picture.³ Cases of pseudomembranous enterocolitis occurring prior to the antibiotic era or occurring currently in the absence of antibiotic administration have almost uniformly either not been cultured or have been cultured and shown not to have an overgrowth of staphylococci.

5. *Staphylococcal enterocolitis must be distinguished from staphylococcal food poisoning.* In the latter disorder food containing large amounts of enterotoxin is ingested but the organisms do not proliferate in the intestinal tract; symptoms are produced simply by ingested enterotoxin.

Analysis of Cases

Eight cases of staphylococcal enterocolitis were seen in the Kansas City Veterans Administration Hospital in the six-month period from January through June of 1960. In all cases the diagnosis was well established, each patient having at least two stool smears on which there were abundant staphylococci and at least two cultures which revealed a pure, heavy growth of staphylococci on non-selective media. It is relatively uncommon to see this many cases in a brief period of time though similar outbreaks have been reported.^{1, 4, 6} This was an unusual incidence in this hospital; during the year prior to this six-month period there was one case and during the subsequent two years there were three cases. There was no concomitant increase in wound or other infections during this six-month period and the reason for the transient high incidence remains obscure.

Four cases occurred on each of two general surgical wards. Three of the cases occurred within a four-day period and were in the recovery room at the same time. The remainder of the cases were separated from one another by several weeks.

The average duration of hospitalization prior to onset of enterocolitis was 25 days, with a range of 11 to 60 days.

These patients ranged in age from 33 to 74 years with a mean of 58 years. In this connection it must be remembered that this hospital deals exclusively with a veteran population.

Six of the eight patients had an associated "debili-

tating" illness (*Table 1*). In five this was an infectious process of some type and in one a malignancy. Two of the patients were in excellent general health.

All of the patients had been operated upon, seven

TABLE 1
ASSOCIATED "DEBILITATING" DISEASE

Perforated appendicitis with abscess	1
Perforated marginal ulcer with abscesses . . .	1
Diverticulitis with abscess	1
Chronic bleeding duodenal ulcer with anemia	1
Acute cholecystitis and diverticulitis	1
Obstructing carcinoma of colon	1

of them during the three to seven days prior to the onset of infection and one 20 days prior to the onset of infection. This patient had received a bowel prep for acute diverticulitis several days prior to the onset of infection. The operative procedures performed are listed in *Table 2*.

All eight patients had received some antibiotic. In six, a chemical bowel prep had been utilized three to eight days prior to infection and in seven a systemic antibiotic of some type had been administered for at least five days prior to infection. A variety of bowel preps were employed and systemic antibiotics included erythromycin, achromycin, chloromycetin and penicillin.

It should be noted that one patient received bowel prep only, two received a systemic antibiotic only and five received both a systemic antibiotic and a chemical bowel prep. It is of particular interest that five of the seven patients receiving systemic antibiotics were infected with an organism sensitive in vitro to the antibiotic which the patient was receiving; this is in contrast to the findings of others.

As noted before, five of the eight patients had an associated preoperative infection; furthermore, four

TABLE 2
OPERATIVE PROCEDURES

Total colectomy and ileoproctostomy	1
Left colectomy	2
Excision colonic polyp	1
Subtotal gastrectomy	1
Cholecystectomy	1
Appendectomy and drainage appendiceal abscess	1
Drainage multiple intraperitoneal abscesses . .	1

of the eight had some postoperative infection in addition to staphylococcal enterocolitis.

All of the patients at some time in their course presented a relatively typical picture of staphylococcal enterocolitis with greenish-brown diarrhea, fever and prostration. In two of the patients the severity of infection was classified as mild, in five as moderate and in one as severe. *Table 3* shows an estimation of the amount of diarrheal fluid. Of particular note with respect to clinical features is the fact that four of the eight patients had significant paralytic ileus with abdominal distention and in all four this occurred prior to the onset of diarrhea and other symptoms.

TABLE 3
SYMPTOMS

Diarrhea	
Slight (less than 1,000 cc. per day)	1
Moderate (1,000-2,500 cc. per day)	5
Severe (more than 2,500 cc. per day)	2

Shock occurred in two patients. These were the two with the longest delay from the onset of symptoms to the establishment of the diagnosis and the institution of therapy—48 and 72 hours respectively; in all of the other patients this interval was less than 36 hours and in most was less than 24 hours. One of the patients in whom shock developed died, the other made a slow but satisfactory response to therapy.

In all of the patients vigorous and aggressive correction of fluid, electrolyte and colloid deficits were instituted as soon as the existence of staphylococcal enterocolitis was recognized. In addition, certain other measures were employed. In six patients either a change was made in the systemic antibiotic which the patient was receiving, or if the patient was not receiving any antibiotic at the time of onset of infection, one was started. In each of these patients antibiotics were administered in large doses. In two patients all antibiotics were discontinued and fecal enemas were administered. One of these two patients developed a salmonella enteritis following recovery from staphylococcal enteritis. (Salmonella was subsequently identified in the donor stool.) No patient received steroids.

The response to therapy was good in seven patients (though as noted above it was slow in one); one patient died within several hours of the institution of treatment. This was the individual in whom there was the longest delay (72 hours) between the onset of symptoms and the institution of therapy. In pa-

tients who meet the strict diagnostic criteria outlined above, this is an unusually good survival rate.

Discussion

Several important considerations regarding staphylococcal enterocolitis deserve re-emphasis.

1. Pseudomembranous or necrotizing enterocolitis is a non-specific response of the bowel to insult; staphylococcal enterocolitis is one entity which will produce this change but staphylococcal enterocolitis on occasion occurs unassociated with necrotizing or pseudomembranous changes in the bowel.

2. The presence of a few staphylococci in the stool culture of a patient with diarrhea does not make the diagnosis of staphylococcal enterocolitis. In order to be certain that one is dealing with this disease entity, there must be the presence of staphylococci in large numbers on the Gram's stain smear and a heavy growth of staphylococci on non-selective media. Disregard of this point has led to much confusion in reports of this disease particularly with respect to the results of therapy.

3. Staphylococcal enterocolitis is usually due to an alteration of the intestinal flora by antibiotics leading to an overgrowth of the gastrointestinal tract by staphylococci which produce enterotoxin, which in turn produces the clinical and pathological features of this disease. The combination of systemic antibiotics and chemical bowel prep is particularly likely to lead to staphylococcal enterocolitis.

4. Staphylococcal enterocolitis can occur in a wide age range after a variety of operative procedures. It has been noted to occur in instances in which there has not been a previous operative procedure, though this was not observed in our series.

5. Antecedent debilitating illness, particularly infection, apparently predisposes to the development of staphylococcal enterocolitis. It is uncertain whether this is simply due to the fact that infections necessitate the use of antibiotics or whether they actually reduce the resistance of the intestinal tract to infection with staphylococci. It must be remembered, however, that staphylococcal enterocolitis can occur in a healthy patient.

6. Abdominal distention is an important and early diagnostic sign. Staphylococcal enterocolitis should be suspected and the stool smear and culture obtained when unexplained abdominal distention is present. In fact, since the early signs of staphylococcal enterocolitis can be quite non-specific, one should probably obtain a stool smear and culture on any patient who is doing poorly postoperatively.

7. The value of the stool smear in making the diagnosis should not be underestimated. It permits early

(Continued on page 264)

Legislative Cancer

C. JOSEPH STETLER,* *Chicago*

IT IS A REAL PLEASURE and a personal privilege for me to be here today to address the annual Midwest Cancer Conference. I must admit that as I studied the topics on your two-day program and as I read the list of outstanding cancer specialists who are participating, I had a tendency to question the propriety of my presence.

Seriously though, I am honored to be a speaker on your program which is devoted to overcoming one of the greatest challenges confronting medical science. And as I prepared my remarks, I recognized the wisdom of your program chairman in including a talk about the present national legislative and political situation at a meeting on cancer.

For ladies and gentlemen, today, in Washington, D. C., there are signs of a legislative lesion which demand the attention of the medical profession and the public. The cancer that I speak of is the Administration's proposal to provide a compulsory system of health care for the aged tied to increased social security taxes and general revenues.

As a specialist in medical legislation, having spent twelve years of "residency" with the AMA, I diagnose the "new" King-Anderson bill as having all of the early signs of possible cancer for our body politic.

While I know that all of you are familiar with the seven possible signs of human cancer, I wonder if you know that there also are seven early signs of legislative cancer? Let me assure you that there are, and it is imperative that the public and the profession know them and take appropriate action.

Let me review them with you and then comment on each one briefly. They are:

- (1) A lump or obstruction in the channels through which the best possible medical care in the world flows.
- (2) An unusual discharge of political propaganda.
- (3) Persistent indigestion or difficulty by Congress or the public in swallowing similar proposals.
- (4) Unexplained changes in legislative tactics.
- (5) Persistent pressures from those who seek government control.
- (6) Changes in the coverage of the program in an attempt to make it more palatable.
- (7) Any soreness on the part of the medical profession which does not "heal" promptly.

* Presented at the Midwest Cancer Conference held in Wichita, Kansas, on March 30, 1963. Mr. Stetler is the director of the Legal and Socio-Economic Division of the American Medical Association.

Block Best Medical Care

Ladies and gentlemen, all of these early signs of cancer are found in the new King-Anderson bills (H.R. 3920 and S. 880). A reading of the proposals shows that under the program suggested the federal government would inevitably interfere seriously with the traditional free flow of high quality medical care in the United States.

Last year, the American Medical Association and other national organizations warned that the King-Anderson bill would enthrone the Secretary of Health, Education and Welfare as the czar over the nation's hospitals. Administration draftsmen of this year's bill have attempted to overcome this criticism by manipulating legislative language. Their fast phrasing, however, cannot hide the fact that the authority to promulgate rules and regulations governing the administration of a federal health program, involving the expenditure of tax funds, is both explicit and implied in this legislation. The results of such federal controls are "frozen facilities," over-utilization, limited research, and a decrease in the attractiveness of medicine as a career.

Political Propaganda

I know that I need not tell you about the unusual discharge of political propaganda that has accompanied the introduction and consideration of this measure. The proponents keep referring to it as "medicare" and as an insurance program. It is neither. It is basically a limited hospital and nursing home program and rather than being "insurance," it is a tax program pure and simple. However, insurance is a trusted and respected term, and the Administration has used it overtime in an effort to lull the people into believing that they are "paying premiums" to purchase medical care in their senior years.

The Administration has also attempted to perpetuate the myth that a vast majority of the over-age 65 population is in dire financial straits and must receive federal help to meet their health care needs. It is true that some of the aged do have serious financial problems and medicine does recognize that these people often do need the government's help.

At the same time, studies have shown that when the incomes of the aged are considered in the light of family size and tax burdens, they are comparable to those of younger age groups. As for assets, the aged

are found to be in a more favorable position than most people under age 65.

Finally, the worst type of political brickbats are thrown at the medical profession itself. Within the past few years, there has been a concerted and highly organized effort to defame, denounce and destroy the private practice of medicine and doctors' organizations such as the American Medical Association. During the hearings in July, 1961, before the House Ways and Means Committee on H.R. 4222 and the "so-called" Kefauver hearings in the Senate on S. 1552, the real purpose of our opponents was obvious. They did not attempt to present facts and arguments for the legislation under consideration, instead they sought to make the doctor and his professional association the villain of the plot.

We at the AMA have been blasted, maligned, belittled, and castigated by our enemies. They have referred to us as the "American Mossback Association," "Operation Footdrag" and as the "Surgical Mask for the John Birch Society."

I can assure you, however, that statements of this type serve only to impede the progress of the bill.

Difficulty in Swallowing

Persistent indigestion or difficulty in swallowing King-Anderson type legislation by Congress and the public is becoming an old story. Even though the bills are given different names and presented under various guises, Congress has refused all of these proposals.

The next two years will again be decisive for medicine. If we defeat the Administration's social security health care proposal during this year and next, I believe we will have gained a significant legislative victory. From Murray-Wagner-Dingell to the Forand bill, to King-Anderson, to Anderson-Javits, to the new King-Anderson, the proposals have been gradually watered down. Yet, Congress has continued to find these bills unacceptable and has rejected them. The proponents of socialized medicine cannot continue forever to revive and beat this ungainly legislative beast before a public which is growing tired of its grisly performances. Victory in the 88th Congress will, in my opinion, insure medicine a temporary breathing spell.

Changes in Legislative Tactics

What about unexplained changes in legislative tactics? Why have they occurred? The fact is that the Administration has had to change its tactics because the people have awakened to the fact that the aged care bill tied to social security is bad medicine.

The Gallup Poll, in 1961, reported that 67 per cent of the public favored King-Anderson-type legis-

lation. By April, 1962, that figure dropped to 55 per cent. In July, just before the Senate vote, support for the plan had declined to 48 per cent. And in August, the Gallup Poll in the Midwest area showed only 44 per cent of the people favoring social security health care for the aged. Many members of Congress conducted their own polls last year and found that 54 per cent of the people were against the proposal.

If we review the "case history" of this legislation, we find first, that President Kennedy gave great urgency to the bill during his honeymoon with the 87th Congress. A tremendous effort was made by the Administration, including attempts to conscript Civil Service employees to lobby for the measure. "Sales" teams were sent out from the White House to seek passage of the bill. Members on the White House staff worked actively with labor's Senior Citizens Council in directing the Council's efforts in lobbying for passage of the bill. All of these efforts—some unlawful—failed and Congress last year rejected the Administration bill.

Now, what is the Administration tactic? The President has now requested priority Congressional treatment for three subjects:

1. Federal Aid to Education,
2. A federally subsidized program of medical care for the aged, and
3. A \$10 billion tax reduction.

While I believe that a tremendous effort will be made to enact an aged care bill, tied to social security, in the 88th Congress, I look for this effort to be more subtle, sophisticated and "behind the scene" than it was in the 87th Congress. I also believe that it will be "timed" for maximum effect. To me, this means that the actual vote on this issue will be planned for the Second Session—or just in time for the 1964 Presidential election. Be assured, nevertheless, that this timetable can and will be revised the moment lethargy or inactivity on our part makes passage of the bill feasible. For these reasons, our job will be that much more complex, that much tougher than last time.

Persistent Pressures

Persistent pressures have been put on this type of legislation from those who believe that the problems of this nation can only be solved through welfare legislation with the federal government in the driver's seat. I do not have to name the names of these persons. They keep cropping up at Congressional hearings and their approach is always the same—let's turn it over to the big government to find the solution. I am sure that as physicians who treat cancer patients, you often become disturbed or frustrated with the course of a malignancy. In the same way,

we became disturbed and disgusted with the antics of those social architects who try to find federal governmental solutions to all of society's problems. As medical science seeks a cancer cure, we must also seek in Congress a fresh vigorous climate of individual responsibility, new honesty, and new idealism. It behooves us to build something new and progressive instead of continually borrowing on our future.

Changes in Coverage

A few changes have been made in the *new* King-Anderson bill in an attempt to make it more palatable to Congress and the public. But the changes are matters of form not substance. The basic concept of the proposal is still fraught with dangers. This time they are including health care for those aged not covered by social security by taking funds from the general revenue.

But it remains a wasteful, unsound, extravagant and unnecessary piece of legislation.

Medical Profession Sore

Finally, point number 7, "soreness on the part of the medical profession which does not heal promptly." I can assure you that the medical profession is "sore," mainly because it has been exposed to some of the most vindictive and vicious attacks in legislative history. But through it all, the profession has fought back and, most important, it has won. Today, legislatively, the medical profession is a battle-scarred, savvy, and respected group.

Four Horsemen

It has been said that the Four Horsemen of human cancer are Ignorance, Fear, Apathy, and Quackery. The legislative cancer also has the same four horsemen. This cancer will spread if the public is kept ignorant of the facts. Happily, as indicated, the Gallup Polls show that the public is awakening to the Administration's attempt to perpetuate a hoax. They are recognizing that this program will *not* provide complete medical care for the aged, that it will mean higher taxes, that it will mean government control of the medical profession.

Fear and apathy concerning our legislative plight will also contribute to our defeat in Congress. This is perhaps the most critical danger. Doctors must be active legislatively and politically. They must know the issues. They must carry their message to the voters.

Quackery is the fourth horseman. We are seeing political quackery at its worst by those who mislabel this bill and who try to sell it as a "cure-all." The political quacks must be called on the carpet and defrocked of their guise, so that we will not discard proven, effective treatment for a worthless one.

What then is our strategy for the present legislative battle? In treating human cancer we have surgery and we have irradiation and chemotherapy. I think of surgery as a procedure which quickly cuts out the death-dealing cells. What is its counterpart legislatively? It is political action. It means that candidates, opposed to our philosophy, must be defeated in the 1964 elections. It means that AMPAC, the American Medical Political Action Committee, must become a really significant factor in American politics.

The counterpart of irradiation and chemotherapy in the legislative battle is lobbying and legislative action. I think that medicine has done an effective job in this area and that if we carry on our legislative program with astuteness and decisiveness, we will win again.

Now, in conclusion, let me say this. We must be optimistic in the belief that a cancer cure can be found. Likewise, we must be optimistic that the legislative battle can be won.

I urge you to remember that this is not the time to be stampeded into alternatives or to capitulate on the present proposals. This is the time for firm, courageous action.

What the medical profession does in the next few months can have as much effect on Washington as Washington can have on it.

Let us, therefore, warn the public and the profession.

Let us perform drastic surgery on this malignant social disease by defeating those in Congress who favor this type of legislation.

Let us use irradiation and chemotherapy on this disease by waging a vigorous legislative and lobbying campaign.

If we do all these things, we can win a decisive victory for medicine and the public.

If we tire, if we become complacent, or if we are willing to capitulate or compromise, we will lose. For we will then surely fit the description of Pogo, my favorite comic strip character, when he says, "We has met the enemy and they is us."

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Malignant Melanoma

Edited by CHARLES T. HINSHAW, JR., M.D.

Dr. Stanley R. Friesen (Moderator): For today's conference we have two variants of a lesion, both of which demonstrate some unusual features. Mr. Kemper, will you present the first patient, please.

Mr. Carlos K. Kemper (Medical Student): A 34-year-old woman was first admitted here on October 2, 1962, with the complaints of a lump in the right arm and pain in both legs. The lump had been present for many years as a flat, brown, bean-sized lesion on her right arm. Ten months prior to admission it started to grow, with acceleration of growth since March, 1962. For the past three to four months the patient had severe lumbosacral pain. It was more severe in the evenings. Anorexia for the past two to three days was attributed to nervousness. She had lost about five pounds in the past three to four months. She was at least four months pregnant.

On physical examination, a black, 8 cm. diameter mass, elevated approximately 3 cm., was seen on the lateral aspect of the right deltoid region (*Figure 1*). There was also a mass in the right axilla. There were numerous subcutaneous satellite lesions over the anterior chest wall, both forearms, both thighs and around the umbilicus. These were not black. The chest was clear, the heart was normal. The liver was felt three finger breadths below the right costal margin. Some examiners felt a mass in the left upper quadrant of the abdomen. While hospitalized, the lumbosacral pain was difficult to control. The patient was dismissed on October 24, but had to return one week later because of severe, intractable pain of the lumbosacral and thigh regions. She died at home about one month after her first hospitalization.

Dr. Galen Tice (Radiologist): In the films taken

during the first hospitalization several metastatic lesions are readily apparent. They are present on both sides of the chest and the liver is enlarged. The fetal skeleton can be seen and represents about five months pregnancy.

Dr. Friesen: Are there bony lesions? She complained of severe lumbosacral pain.



Figure 1. Malignant melanoma.

Cancer teaching activities at the University of Kansas Medical Center are aided by grants from the National Cancer Institute and the U. S. Public Health Service.

Dr. Tice: We didn't recognize metastases to bone. The spine was quite straight. Soft tissue pain, causing muscle spasm, could account for the straight spine.

Dr. Friesen: So as far as x-ray appearance is concerned, we can say that she was pregnant, and that she had an enlarged liver and bilateral pulmonary metastases, evidence of vascular spread. I presume the lesion was biopsied.

Dr. William J. Forrest (Resident in Plastic Surgery): We elected to do an excisional biopsy because the lesion was ulcerated and drained a foul, purulent fluid. This necessitated a skin graft. We selected an area of the anterior thigh not involved by tumor as the donor site.

Dr. Friesen: Dr. Helwig, would you comment on the gross appearance of this lesion, and then we will look at the slides.

Dr. Ferdinand C. Helwig (Pathologist): Today we are dealing with a malignant melanoma. Melanomas can be ulcerating, fungating, or both, as this tumor was. They may fungate without ulceration until quite late. They may be pigmented or nonpigmented. The tumor we are studying today had quite a lot of pigment in it. The ubiquitous character of melanoma is of interest. It is no respecter of tissue to which it may metastasize. The mass felt in the left upper quadrant of the abdomen may have been a big spleen. Whereas spleen and heart muscle are usually areas that are rarely involved by metastatic tumor, their involvement is very common in melanoma. Furthermore, metastatic involvement of the liver, the lung, and widespread throughout the subcutaneous tissues is known to have occurred in today's case.

When the excised tumor, from the patient presented today, is examined microscopically you can see that it has extended deeply into the subcutis fat. It is present at the edges of resection. The tumor has a fungating portion. I was unable to identify any clear cut junctional component (*Figure 2*), but that is not unusual in these cases of large, ulcerating, fungating melanomas. The tumor is ulcerated, infected, and has become so destructive that any evidence of the junctional component from which it spread may have been erased. This is a small, spindle-form type of growth which in metastases will sometimes yield completely apigmented lesions. They are often mistaken for spindle-cell tumors, fibrosarcomas, neurogenic sarcomas, etc. (*Figure 3*). The tumor we are studying has scattered large and bizarre nuclei, but it is generally uniform.

One thing that has always struck me is the tremendous variation in the microscopic pattern of these growths. For this reason I follow a scheme that Purdy Stout once set. "When you find something in a lymph node or in the skin and you are not sure of its histogenic background," he said, "put on that old

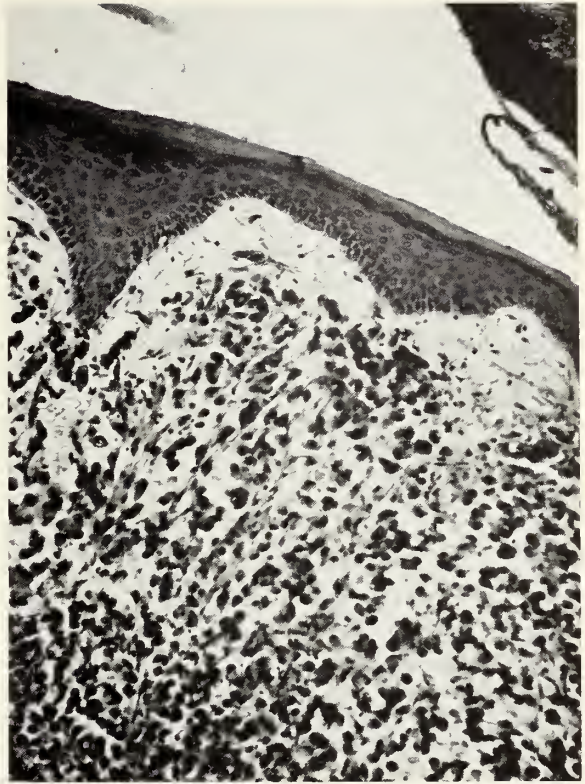


Figure 2. Melanoma cells invading dermis. Epidermis is free of junctional activity. ($\times 125$)

record that says, 'can this be a melanoma?' " I play that old record practically once a week, because melanomas can duplicate practically anything from a squamous cell carcinoma to a malignant lymphoma, in their microscopic appearance.

Now, in relation to pregnancy, there is a great difference of opinion. My own personal feeling has been throughout the years that pregnancy is a great accelerator of the growth of melanomas. Some of the men who have had a great deal of experience with material in this field feel the same way, particularly in regard to those benign junctional nevi which become malignant following pregnancy, when they seem to grow so rapidly. However, recently there have been two or three papers presented to the effect that maybe this accelerated growth is more apparent than real. At the Fifth International Pigment Cell Conference, White stated that in a large amount of material he was unable to see any difference in the growth rate or metastatic proclivities of melanoma in the pregnant and non-pregnant individual. However, I am still convinced, in my own mind, that it does speed up the growth. Every case that I have seen, maybe this is a unique experience, has been rapidly fatal. In 32 cases, associated with pregnancy, reported by Pack in 1951, 14 were dead in three years

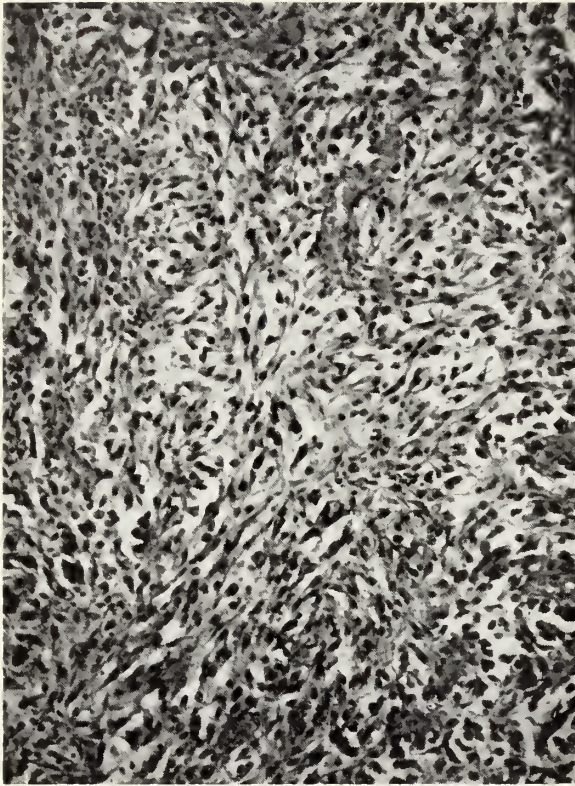


Figure 3. Malignant melanoma exhibiting sarcomatous appearance. ($\times 125$)

or less. However, that is not too different from malignant melanomas in general. Pregnancy has always seemed to me to have an effect upon the growth rate and widespread dissemination of malignant melanoma.

Dr. Friesen: That is a pretty general association between pregnancy and all malignancies. Is there ever any difference between melanoma and others?

Dr. Helwig: Well, there does seem to be a definite relationship between melanin pigmentation and the pituitary. It is a pathologic curiosity to have a juvenile melanoma become malignant before puberty. Whereas, after puberty, they take on the tendency of melanomas in general. Moreover, there does seem to be some relationship between the pituitary and the elaboration of melanin pigment. Pregnancy brings on pigmentation of the nipples, vulva, and even will pigment the skin of a dermoid cyst of the ovary.

Dr. Friesen: There certainly is a lot of circumstantial evidence that there is a hormonal relation to pigment metabolism. Dr. Rockwell, would you have any additional comments, generally or specifically, about this patient?

Dr. Wayne L. Rockwell (Obstetrician-Gynecologist): Just in addition to what has already been said, I might say that the 32 cases that Pack had in 1951

were part of a later report including 115 cases and 330 controls.² They were reported in *Cancer* of 1960. There was no significant difference between those pregnant and those not pregnant. As has already been mentioned, the feeling seems to be now that pregnancy does not influence the course of melanoma. Melanoma can involve the placenta and has crossed the placenta to the fetus.

Dr. Helwig: Melanoma has apparently crossed the placenta and involved the fetus in two cases³ that I know of, and, I believe, there are one or two more recently reported cases of this.

Dr. Friesen: Dr. Rockwell, is the relationship between melanoma and pregnancy significant enough in your mind that you would stop the pregnancy?

Dr. Rockwell: No, there is pretty universal agreement that it is not worth aborting pregnancy.

Dr. Friesen: If the patient had already been treated for melanoma, and there was no evidence of metastasis, and if she wanted to become pregnant, would you advise against pregnancy?

Dr. Rockwell: Yes, the rule is five years without pregnancy. If, however, they become pregnant in this situation, nothing is done. If they have residual disease, you are talking about longevity, not survival.

Dr. Friesen: Dr. Robinson, do you have any comments, perhaps about the natural history of this tumor and about the choice of treatment?

Dr. David W. Robinson: There is a peculiar thing about this disease, and that is the long survival of some cases. The tumor may lie dormant for years. Some of them will fool you by curing themselves. Actually, melanomas can come, with no apparent nevus that you can see, at any age. It is always surprising to me to see a melanoma suddenly appearing in an elderly patient.

In certain locales they are more dangerous than others. Those particularly on the plantar surfaces are bad, those of the genitals have a very poor prognosis, and the worst of all seem to be those that start in the mucous membranes of the lining of the nose or oral cavity, or ano-rectal juncture. These have a very, very bad prognosis.

The usual form of spread is hematogenous. There is little we can do about this. When they spread by way of lymphatics they go in general by two ways. One way is by the superficial dermal lymphatics and the second way is by deep lymphatics. If they start to spread by superficial lymphatics, there is usually a fairly long prognosis. If they get into the deep lymphatics there is not nearly as good a prognosis, because regional lymph nodes are reached early, and hematogenous spread seems more likely. Thus, the site of origin and route of spread have a bearing on the outcome of malignant melanoma. However, the

prognosis is so difficult to make any statements about that you always have to be very guarded in what you say to anyone about their own outcome.

Concerning the treatment, when you have made a diagnosis and you feel there may be some remaining tumor, we believe that radical excision should be performed, which usually means removal of enough surface area that one has to cover this by some means. Usually this means a skin graft, and perhaps, if important structures are bared, something more than a skin graft. At the time of initial excision the best operation is to take out the regional nodes that drain the area, in continuity with the primary tumor. But, this has to be modified by judgment. Ordinarily, one wouldn't take off a subungual melanoma from the big toe and expect to take out a strip of skin and tissue, with lymph nodes in continuity, to the inguinal region. So we have to have skip areas. Although theoretically and difficult to prove, sometimes it is well to take out the primary tumor and wait for a period of four to six weeks for cells that might have gotten loose to filter into the lymph nodes, and then to clean out the original nodes. Super-radical surgery, which was tried out 10 to 12 years ago, has been almost completely done away with. Chemotherapy now has a place in the treatment of melanoma. Dr. Hardin has experience in this and perhaps will say a word about it.

Dr. Creighton A. Hardin: As Dr. Robinson has intimated, one of the greatest difficulties in the surgical treatment of malignant melanoma is related to the depth of spread. The classical or traditional regional lymph node dissection often doesn't come anywhere near the disease. Now, fortunately, there is a mustard, called phenylalanine mustard, which has a propensity for binding with melanin. Of all the various chemicals of alkylating nature, this is the best for use against melanoma. Oral phenylalanine mustard is of no value whatsoever. Total body perfusion after bone marrow explant, followed by implantation of the preserved autogenous marrow, has very little effect on the patient's disease.

Now, the type of tumor that lends itself to perfusion is on an extremity, though occasionally a lung has been perfused. We use a technique in which the alkylating agent is perfused into an area which has been regionally isolated. In this procedure, various factors are important. Hypothermia probably should not be used in perfusion. Hyperthermia, or heating of the blood, is of some definite value. A condition of cooling in the upper half of the body, to protect the bone marrow, with heating of the blood and perfusate going to a distal extremity, would make sense because there is always some leak in the system regardless of the isolation that you have. Such a com-

bination of temperature regulation would help protect the bone marrow. The perfusion rate is a technical factor, but a low perfusion rate probably exposes more tissue to more of the alkylating agent. Any alkylating agent should have a fair degree of oxygen saturation. Thus, filling the line with plasma expanders or salt is much inferior to blood.

There is a propensity to nerve damage by alkylating agents, in the head and neck, particularly the seventh nerve, and in the extremity the peripheral nerves that are present. When the nerves are involved with tumor, this is a blessing in disguise, because there is some relief of pain. Swelling occurs following perfusion in approximately 50 per cent of the cases. Hematopoietic depression is present in anywhere from 10 to 20 per cent.

Oscar Creech⁴ has popularized the perfusion treatment of melanomas. In Creech's series, melanoma was controlled at the end of three years in 30 per cent of his patients. By "control," Creech implies complete or partial regression of tumor with no evidence of growth. Results of excision and perfusion of primary melanomas of the extremities were considerably better than similar treatment of secondary melanomas of the extremities. The present thinking of Dr. Creech and his group is that surgery is done with the principle, which I think is a good one, to remove as much of the bulk of the tumor as possible. This is followed with adjunct therapy of regional perfusion, later on. The immediate striking result of palliation of disseminated melanoma in the extremity is quite remarkable. We have to wait to see what the long term effect will be.

Dr. Friesen: Dr. Kirchner has collected a series of cases in his experience that is unique, occurring in an area where they are certainly not seen very often.

Dr. Fernando R. Kirchner (Otorhinolaryngologist): About 117 cases of melanoma occurring in the nose, or paranasal sinuses, were collected in the literature by Ravid, in an article he published on this subject. He felt, after reviewing all of these cases, that there were only 30 cases in which the evidence was well documented, with biopsies and good histories. In the opinion of Ravid, melanomas arising in the nose and paranasal sinuses have a very poor prognosis. He gives a prognosis of 10 to 18 months' survival after the primary is discovered.

I have seen four cases of melanoma occurring in the nose or paranasal sinuses. One case we thought was primary in the nasopharynx, but later we discovered it was primary elsewhere. In my experience, the most common complaint of patients with melanoma of the nasopharynx has been epistaxis. On physical examinations, these tumors have appeared black, and they may have satellite tumors. In the nose,

melanomas occur mostly on the septum or lower turbinate.

Treatment of my patients has been by wide excision of the melanoma. I have found extension of melanoma into the lacrimal duct in two cases, so, of course, I now believe that the excision should include the lacrimal apparatus. Of the cases I have seen, one is well and free of disease at three years, one had recurrence eight or nine months after surgery but is still living at 24 months, and one is well and free of clinically detectable melanoma at three months.

Dr. Friesen: These cases provide a very unusual experience, Dr. Kirchner.

Medical Student: Is there any truth to the idea that treatment of melanoma with rabies vaccine is of benefit?

Dr. Rockwell: In one of the cases reported by Dr. Pack, a woman was bitten by a dog in 1943. She had melanoma at the time and was treated for the dog bite with rabies vaccine. She had a seven year remission of the melanoma. Pack later reported that eight of 30 patients showed objective response when treated with a vaccine which also included other viruses.

Dr. Friesen: We have tried, in the time of one hour, to cover a subject that is very broad, and a subject which sometimes occupies the time and thought of a whole international congress. It is obvious that we cannot cover the entire subject of melanomas.

Melanoma is a not uncommon malignancy. We have heard something about the difficulty in prognosis. We have heard something about the difficulty in treatment, and that there are many treatments used. The best treatment is immediate, adequate excision. This is wide excision, often to the point that replacement by skin graft is going to be necessary. Fulguration is not recommended because a histologic diagnosis is not obtained, and because it seems that local recurrence and metastases quickly follow fulguration. I don't know if that has been proven or not. Every excised lesion should be sent to the pathologist for diagnosis, for those least suspected sometimes prove to be malignant melanoma.

References

1. Pack, G. T., Scharnagel, I. M.: The prognosis for malignant melanoma in pregnant women. *Cancer* 4:324-334 (March) 1951.
2. George, P. A., Fortner, J. G., and Pack, G. T.: Melanoma with pregnancy. *Cancer* 13:854-859 (July-August) 1960.
3. Allen, A. C.: *The Skin, a Clinicopathologic Treatise*. 1st Edition. C. V. Mosby, St. Louis, 1954. p. 858.
4. Krementz, E. T., Creech, O., Jr., Ryan, R. F., and Reemtsma, K.: An appraisal of cancer chemotherapy by regional perfusion. *Ann. Surg.* 156:417-428 (September) 1962.
5. Ravid, J. M., and Esteves, J. A.: Malignant melanoma of the nose and paranasal sinuses. *Arch. Otol.* 72:431-444 (October) 1960.

Wound Healing

(Continued from page 251)

5. Miles, A. A., Miles, E. M., and Burke, J.: The Value and Duration of Defense Reactions of the Skin to the Primary Lodgement of Bacteria, *Brit. J. Exper. Path.* 38:79, 1957.

6. Miles, A. A., and Niven, J. S. F.: The Enhancement of Infection During Shock Procedures by Bacterial Toxins and Other Agents, *Brit. J. Exper. Path.* 31:73, 1950.

7. Reid, Mont R.: Some Considerations of the Problems of Wound Healing, *N.E.J.M.* 215:753-766, 1936.

intestinal factors in shock, we can easily conjecture that hypovolemia may have an important effect upon resistance to intestinal infections and staphylococcal enterotoxin. It may be that correction of the hypovolemia is the critical factor in the successful treatment of staphylococcal enterocolitis, that when this is done body defenses adequately handle the infection but when it is not, all else is of no avail.

References

1. Gardner, R. J. and Preston, F. W.: Staphylococcal Enterocolitis. *Quart. Bull. Northwestern Univ. Med. Sch.* 35:20, 1961.
2. Hinton, N. A., Taggart, J. G. and Orr, J. H.: The Significance of the Isolation of Coagulase Positive Staphylococci from Stool—With Special Reference to the Diagnoses of Staphylococcal Enteritis. *Am. J. Clin. Path.* 33:505, 1960.
3. McKay, D. G., Hardaway, R. M., Wahle, G. H. and Hall, R. M.: Experimental Pseudomembranous Enterocolitis. *Arch. Int. Med.* 95:779, 1955.
4. Paine, J. R.: Staphylococcal Enterocolitis. *Nebraska Medical Jour.* 43:433, 1958.
5. Prohaska, J. V.: Pseudomembranous Enterocolitis. The Experimental Induction of the Disease by Staphylococcus Aureus and Its Enterotoxin. *Arch. Surg.* 79:197, 1959.
6. Webster, C. U.: Staphylococcal Diarrhea. *Lancet* 2:1036, 1958.

"Staph" and Antibiotics

(Continued from page 256)

diagnosis and is a reliable indicator of the probable presence of the disease; it should be utilized whenever staphylococcal enterocolitis is suspected.

8. Early diagnosis and early institution of adequate fluid, electrolyte and colloid replacement is the imperative step in treatment. This is probably much more important than antibiotic manipulation, fecal enemas, steroids, etc. From some of the evidence on

The President's Message

DEAR DOCTOR:

Following the very successful and enjoyable meeting in Salina I feel that the President should extend the thanks of the State Society to the Saline County Medical Society for the excellent program and entertainment during the meeting. Also, Marymount College, the Salina Country Club and the Officers' Club were gracious hosts to the Society.

I feel sure that the presence of Dr. Edward Annis added to the interest and also that the membership will have been stimulated by his forceful address.



H. St. Clair O'Donnell M.D.

President



Editorial COMMENT

Wheat Referendum

Wheat growers are now asked to vote on a multiple price certificate plan for wheat. It is known as a wheat referendum which the Secretary of Agriculture catalogues as the farmer's choice between \$2.00 and \$1.00 wheat. A negative decision, he predicts, will produce chaos.

Mr. Walter Pierce, of Hutchinson, president of the Kansas Farm Bureau, visited the House of Delegates of this Society at Salina on April 29, 1963. The government, according to the Kansas Farm Bureau, is attempting to delude and frighten the farmer by threats on the one hand and by disguising true issues on the other.

"The basic issue is whether the farms of America are to be managed by farmers or by a government bureaucracy. Only wheat is directly involved at the moment, and only wheat producers can vote; but all farmers, consumers and taxpayers will be affected by the outcome. The result will affect our relations with other countries, our taxes, and perhaps even the future direction of government policy toward nonfarm groups.

"The proposed wheat program was designed to operate in conjunction with a compulsory feed grain program. This is already creating pressure for new feed grain legislation. If we go the supply-management road first with wheat, then with feed grains, we will have taken a long step toward the adoption of compulsory controls for livestock, dairy and poultry products. The alternative available to wheat producers is to vote "no" and move away from programs that fix prices and ration the right to produce.

"Every effort is being made to make the 1964 program look attractive and painless, but the noose inevitably will be tightened in the future if wheat producers vote to put their necks in it."

In the United States Department of Agriculture,

the Farm Bureau believes, can be found a mastermind whose written opinions were quoted. For example, this is an application of the supply control theory, which is, "... the conscious adjustment of supply to demand, commodity-by-commodity, year after year, to yield prices in the market that have already been determined by some responsible agency," according to a signed article in the *Wall Street Journal*. During a question-answer session he readily admitted once this theory was accepted producers would not merely be encouraged, they would be forced to comply to make the theory work. And the beginning is wheat!

So, the subject of Mr. Pierce's remarks was the wheat referendum. Or was it? With the transposition of a few words, such as "doctor" for "farmer," or of agencies, or substitute "essential service" for "essential commodity" the picture was clear.

The subject was free enterprise versus government regulation. The issue is no more wheat than health care for the aged or federal aid to education or socialized housing. The issue is the future of America, a momentous struggle over ideologies.

The wheat referendum is not merely a farmer's dilemma. The question today is the \$2.00 promise over a \$1.00 threat. This is the lure, disguised a hundred ways to make it appear attractive, but the hook is always present. To be caught requires only that you reach forth and take it, a simple preference of the easy over the sterner choice of self-reliance.

And the choice rests with us all. Today the wheat farmer, tomorrow someone else. As they are taken, one group following another, this nation slowly awakens to the sad realization that there are no groups left to choose. The choice is gone. The ideology has been determined. Socialism has come home.

The Medical Witness

At a recent medicolegal convention conducted by the American Medical Association a series of suggestions were stated as guides for the expert witness in a court proceeding.

Do take the role of the medical witness seriously. The courtroom is a place in which practical men are engaged in the serious work of endeavoring to administer justice. The role of the medical witness is a key one in this endeavor.

Don't agree to or accept compensation for your services contingent upon the outcome of litigation. This practice is unethical and its disclosure would be apt to destroy the value of your testimony.

Do insist on preparation for your testimony in consultation with the attorney for the party who called you as a witness. He should advise you on what to expect on cross-examination. You have a right to consult with the party and his attorney about the case, so, don't be embarrassed if asked about such consultation.

Don't act as an advocate or partisan in the trial of the case. If the attorney for the party who calls you as a witness needs the advice or guidance of a doctor during the trial, let him employ another doctor. Disclosure of partisanship of a witness strongly tends to discredit his testimony.

Do be as thorough as is reasonably necessary under the circumstances in examining a party in preparation for trial. Exhaustion of all possible tests and procedures may not be required, but be prepared to justify any omissions.

Don't exaggerate. Any attempt to puff up your qualifications or to elaborate the extent of the examination you have made is apt to be exposed, to your embarrassment.

Do inform the attorney for the party who called you as a witness of all unfavorable information developed by your examination of the party, as well as the favorable information.

Don't try to bluff. If you don't know the answer to a question, don't guess. If you guess wrong, you may be falling into a trap.

Do be frank about financial arrangements with the party who called you as a witness, with respect to your compensation for both treatment given and services in connection with the litigation.

Don't regard it as an admission of ignorance to indi-

cate that your opinion is not absolutely conclusive or that you don't know the answer to a particular question. Honesty may frequently require testimony of this nature.

Do answer all questions honestly and frankly. Any display of embarrassment or reluctance to answer will tend to discredit your testimony.

Don't use technical terminology which will not be understood by the jury, the attorneys, or the judge. If technical terms are unavoidable, explain them the best you can in the language of the layman.

Do be willing to disagree with so-called authorities if you are convinced that they are wrong. If you have sound reasons for disagreement, the contrary opinion of authorities will not necessarily discredit you.

Don't be smug. A jury is quite likely to react adversely to an attitude of this nature. A modest attitude on the part of a witness is apt to elicit a more favorable response. Leave it to the attorney to bring out your special qualifications.

Do be courteous no matter what the provocation. If a cross-examining attorney is discourteous to you, this is apt to win sympathy for you from the jury, provided that you don't descend to the same level.

Don't lose your temper. If a cross-examining attorney can provoke you to a display of anger or sarcasm, he has already substantially succeeded in discrediting your testimony.

Do pause briefly before answering a question asked on cross-examination, to give the other attorney an opportunity to object to the question if he so desires. Taking a moment for deliberation before answering a question does not indicate uncertainty or embarrassment.

Don't allow yourself to be forced into a flat "Yes" or "No" answer if a qualified answer is required. You have a right to explain or qualify your answer if that is necessary for a truthful answer.

The art of progress is to preserve order amid change and to preserve change amid order.

—*Alfred N. Whitehead*

No great work was ever produced except after a long interval of still and musing meditation.—*Walter Bagehot*



Book REVIEWS

ENZYMES AND DRUG ACTION. Editors J. L. Mongar, Ph.D. and A. V. S. de Reuck, M.Sc., D.I.C. Little, Brown and Co., Boston, 1962. 556 pages. \$12.50.

This volume is another in the highly esteemed series of Ciba Foundation Symposia, and was planned to cover the very general subject of enzymes and drug action with the aim of exploring those phases of biochemistry which are likely to assume growing importance for pharmacologists and therapeutists of the future. The major areas discussed include: enzymes as primary points of drug action, active transport, receptors, alterations in drug metabolism (including drug tolerance and sensitivity), and the actions and metabolism of drugs at cellular and subcellular levels.

Most of the material is rather academic and is unlikely to be of much current use to clinicians, but some will find it interesting to scan the book to see how far pharmacology has come since their school days and where it seems likely to go—taking therapeutics with it. The chapter on drug tolerance is of some immediate practical significance, and a section on why drugs are metabolized in the chapter on subcellular mechanisms of drug metabolism is of both theoretical and clinical interest.

The book is well printed and bound, and is adequately illustrated. There is an extensive author index in addition to a very complete subject index.—*J.D.R.*

SYNOPSIS OF NEUROLOGY, by Francis M. Forster, M.D. C. V. Mosby Co., St. Louis, Mo., 1962. 223 pages. \$6.75.

Oriented for the needs of the medical student, this is a concise summary of the technique of the neurological examination and abbreviated descriptions of the disease entities which involve the nervous system. It would be helpful in preparing for state board examinations, and as a brief refresher

reference for the physician not in frequent contact with neurological ailments.—*D.B.F.*

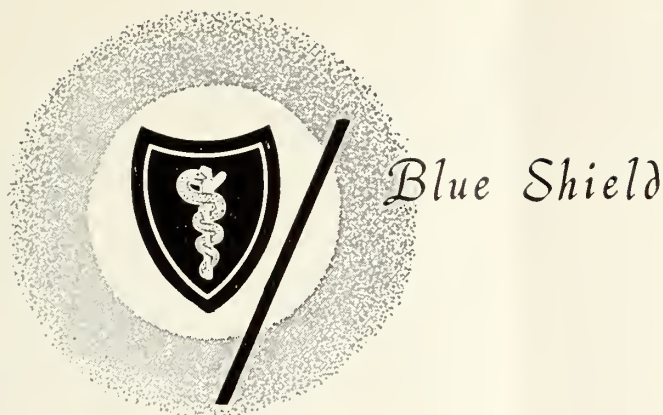
MALPRACTICE LAW DISSECTED FOR QUICK GRASPING by Charles L. Cusamano. Medicine-Law Press, Inc., 1962.

This book is written to "make the fundamentals of the law of medical malpractice clear for quick understanding by anyone interested in the subject," and it accomplishes its purpose well. Material is presented concisely and has been "translated" from legal language to a form understandable by any intelligent reader.

There are statements in the book which are frightening to a physician-reader, making him wonder if a malpractice suit lurks behind each patient, but this is inherent in the subject and not the "suggestion" of the author. In addition to telling the unpleasant aspect of the problem, he also details the pitfalls which may lead to a malpractice suit, the measures which should make it possible to avoid them, and the best procedures for defense. Although an attorney interested in instituting malpractice suits can find material he can use, it is not a book written to encourage such actions, and offers a great deal to those interested in the physician's side of the problem.

Some chapter headings are: Relationship of Physician and Patient; Duties of Physician Toward Patient as to Diagnosis and Treatment; Elements of a Malpractice Case; How a Malpractice Case Is Proved in Court; Physicians' Defenses in Malpractice Cases; Malpractice Liability of Physician for Acts of Others; Medical Contract Suits Against Physicians; Consent to Treatment; Other Torts for Which Physicians Are Liable; Protective Suggestions for Physicians.

It is a well written book, and though the typography could be improved by less crowding on the pages, this is a minor point. It should be a useful book for those in active medical practice—*O.R.C.*



Schedule 3 Allowances Revised

Schedule 3 allowance revisions effective April 1, 1963, affect three fields of practice including hospital medical care, anesthesia, and radiology. The reasons for these changes help illustrate what Blue Shield hopes to maintain as its basic intent in reference to the new program, namely that Schedule 3 will, insofar as possible, remain adaptable to the needs of medical practice in areas approving the program.

Formerly, radiology and anesthesia allowances under the plan were unchanged from Schedule 2 levels. No original change was made since indications at the time of the program's 1960 development were that previous allowances were adequate to needs in localities contemplating adoption of the program. Schedule 3's medical care payments included first and last days' coverage but in other respects were similar to Schedule 2 for the same reason.

Two years of experience, coupled with increased local Schedule 3 acceptances, revealed that certain inadequacies were becoming evident. The decision to adjust allowances was consequently made in an attempt to bring payments into an alignment mirroring the needs of professional practice in these fields.

Revised In-Hospital Medical Care allowances will provide the availability of increased benefits for short-stay admissions of five days or less. The new schedule will be similar to the original Schedule 3 payments for hospital cases of six or more days' duration.

Anesthesia allowances for the first hour have been upgraded by the establishment of maximums of \$15 for the first 30 minutes, and \$10 for the second half hour's administration. Previous allowances for succeeding 30-minute periods remain effective.

Radiology procedures—both diagnostic and therapeutic—were rescheduled. Many diagnostic studies have been provided increased allowances, and payments for all x-ray and radium therapy procedures,

both per treatment and by course, were raised.

With the April 1 revisions added, an outline of present Schedule 3 features appears as follows:

- Medical Care in the Hospital:
 - First and last day coverage.
 - More adequate short-stay benefits.
 - In-hospital consultation benefits provided (one per admission).
- Surgery:
 - Forty frequently performed procedures increased above Schedule 2 levels.
 - Assistant surgery benefits available for all procedures at 15 per cent of surgical schedule.
- Radiology:
 - Increased allowances for both diagnostic and therapeutic procedures.
- Anesthesia:
 - Increased benefits for first hour's administration.
- Other Benefits:
 - Allowances for obstetrical delivery, emergency first-aid, suturing, etc., on same basis as Schedule 2.
 - Allowances for obstetrical services are intended to relate to delivery and postnatal care only. Physicians are not obligated to service benefit provisions for charges for full term care. If only prenatal visits are involved, no Blue Shield allowance is available.

It is hoped that the Schedule 3 program has been strengthened by recent revisions and that the establishment of a greater over-all Fee Schedule equity has been promoted in those areas that have approved the program. Blue Shield is continuing to discuss Schedule 3 with local medical societies upon invitation and would welcome opportunities to explain the specifics of recent allowance revisions to any interested group.

KANSAS STATE BOARD OF HEALTH

TOPEKA, KANSAS

Division of Preventable Diseases—Division of Vital Statistics—Kansas Morbidity Incidence
 Summary of Cases Reported in February 1963 and 1962
 And cumulative totals for the first two months of 1963 and 1962

<i>Diseases</i>	1963	<i>February</i>		<i>January to February Inclusive</i>		
		1962	<i>5-Year Median 1958-1962</i>	1963	1962	<i>5-Year Median 1958-1962</i>
Amebiasis	20	3	2	22	7	7
Aseptic meningitis	—	—	*	—	4	*
Brucellosis	1	—	3	—	4	6
Cancer	277	312	312	571	613	708
Diphtheria	—	—	—	—	—	—
Encephalitis, infectious	—	2	1	1	4	2
Gonorrhea	207	173	167	473	373	393
Hepatitis, infectious	14	53	53	41	141	91
Meningitis, meningococcal	—	2	2	—	4	4
Pertussis	5	—	2	21	—	10
Poliomyelitis	—	—	—	—	—	—
Rheumatic fever	—	1	1	—	1	1
Salmonellosis	6	4	4	20	7	7
Scarlet fever	101	71	71	145	183	183
Shigellosis	—	1	1	9	3	5
Streptococcal infections	258	143	143	409	323	323
Syphilis	85	77	93	169	223	223
Tinea capitis	6	11	11	18	48	48
Tuberculosis	14	25	27	44	45	46
Tularemia	3	—	2	4	1	2
Typhoid fever	—	—	—	—	—	1

* Statistics on 5-year median not available.

LIVE ATTENUATED MEASLES VIRUS VACCINE—(EDMONSTON STRAIN)

Developed in the laboratory of Dr. John Enders, this vaccine, prepared in chick embryo tissue culture, was first tested in 1958 and since has been given to approximately 25,000 persons in the United States, either alone or in combination with gamma globulin. The vaccine induces active immunity following a single dose and produces in the recipient a mild or inapparent, non-communicable measles infection. Although in the majority the symptoms are minimal, approximately 30-40 per cent experience fever, of 103° F (rectal) or greater, beginning about the sixth day and lasting two to five days. However, even those with high fever may experience relatively little disability. In 30 to 60 per cent a modified measles rash is seen which, unlike true measles, begins with or after the subsidence of fever. A few develop mild cough, coryza and Koplik spots.

An antibody response equivalent to that seen in

regular measles develops in over 95 per cent of susceptible children. Measured as late as four years later, the antibody levels induced by the vaccine have demonstrated a stability equivalent to that following the natural disease. Protection upon exposure to measles has been noted for as long as three years and eight months after vaccination.

If standardized Measles Immune Globulin is given in the recommended dose at the same time as the live attenuated vaccine, but at a different site and with a separate syringe, clinical reactions to the vaccine are sharply reduced. About 15 per cent demonstrate fever over 103° F (rectal); the duration of fever is shortened and the incidence of rash is reduced. Although the frequency of serological conversion is the same as that following live attenuated vaccine alone, the level of induced antibody attained appears to be slightly decreased. Antibody titers have been shown to persist for at least three years and protection against the

(Continued on page 287)

Official Proceedings

Report of the 1963 Meeting of the House of Delegates

The transactions of the 104rd Annual Session are published in this issue of the JOURNAL.

Resolutions were introduced at the first House of Delegates meeting. With the exception of Resolution No. 28, they were all referred to Reference Committees and appear in the minutes of the second House of Delegates meeting as they were adopted. Resolutions failing to pass are retained in the minutes at the Executive office, but are not recorded here.

First Session

The first meeting of the House of Delegates was held at the Salina Country Club, Salina, Kansas, beginning with a breakfast at 7:30 a.m., on Monday, April 29, 1963. One hundred and nine members were present.

The meeting was called to order by Norton L. Francis, M.D., President. During the breakfast, a 15-minute motion picture was shown in which Edward R. Annis, M.D., president-elect of the American Medical Association, explained "Operation Hometown," a project for public relations to be conducted by county medical societies. Upon conclusion of this presentation packets of material were distributed to the county medical societies.

Mr. William F. Ferguson, attorney general of the State of Kansas and president of the Bar Association, was introduced. Mr. Ferguson stated he was interested in the continuing work of the joint committee of the Bar Association and the Medical Society and also spoke about the Battered Child Syndrome.

Mr. Walter Pierce, president of the Kansas Farm Bureau spoke briefly on the wheat referendum. He stated that this question is now a problem of Federal control of agriculture and hoped the Medical Society would assist the Farm Bureau in trying to prevent this.

The primary election was then held with a vote on all offices with more than two candidates. The election of officers for all positions will be held on Wednesday.

The President reported on the value of KaMPAC and hoped this effort would be continued in the coming year. He also stated that 14 of the 17 council districts had meetings during the year. These were well attended and he thought this was one of the best means of communication available to the Society and a worthwhile project. Dr. Francis complimented

the committees for their activities during the year, and then commented briefly on several items of medical interest that appeared during the past legislative session.

H. St. Clair O'Donnell, M.D., President-elect, stated his hope that the coming year would be worthwhile and looked forward to the cooperation of all members to make it so. He announced that committee appointments were almost completed. The chairmen had accepted, but the membership appointments had not all been made. They will be completed soon and will appear in the JOURNAL.

REPORT OF THE CONSTITUTIONAL SECRETARY

Following is a summary of the Membership Report of the Kansas Medical Society for 1963:

Dues-Paid Members	1,438
Honorary Members	151
Emeritus Members	13
Leave-of-Absence Members	42
In-Service Members	6
Delinquent Members	198
Total	1,848

The membership in 1962 was 1,867. The 1963 membership represents a decrease of 19 members.

LELAND SPEER, M.D., *Secretary*

John L. Lattimore, M.D., then gave the report of the treasurer. He summarized the preliminary audit and explained to the House of Delegates the nature of items of expense and income. A detailed audit and budget will be presented to the council when it is completed.

REPORT OF THE EDITOR

Looking back at my earlier reports, the mention of the number of pages of text, the amount of advertising, and the number of different types of articles seems quite prominent. Since these features have not changed significantly, I am going to assume that you are acquainted with them, and discuss briefly some other features.

Perhaps the outstanding development in the last year is the publication of three special issues—those issues devoted to a group of related articles and prepared by a group of authors for that specific purpose, or a group of papers presented at one meeting.

In November we had in one issue all the papers presented at the Regional Meeting of the American College of Physicians in Emporia. It was primarily because of the persisting efforts of Dr. John L. Morgan of Emporia that this issue came into being, and we are deeply appreciative of his efforts in this behalf. We have hopes that this can become an annual feature of the JOURNAL, and would welcome the opportunity to publish, as a group, papers presented at other comparable meetings in the state.

The appearance of the second of these issues was in January, and it was devoted to phases of psychiatry of interest and concern to the profession in general. These articles were prepared by the Physician Education Committee of the Kansas Psychiatric Society, under the leadership of Dr. H. G. Whittington, the Director of Community Health Services of the State Department of Social Welfare. His persistence supplied the drive which brought these articles to us, and these efforts are appreciated.

The third special issue was the February number, prepared by the Gerontology Committee of the Society, under the guidance and pushing of Dr. Delbert V. Preheim of Newton. The various articles emphasized both the care and the rehabilitation of elderly patients. As was the case with the others, it was the constant efforts of Dr. Preheim which made this number possible.

All three of these issues were well received, and we have heard favorable comments about each of them. It is entirely possible that articles of this type may be the best way to continue a scientific section of the JOURNAL. I have explained repeatedly the difficulty of obtaining papers, due in large measure to the preference of authors for specialty journals or those with a national distribution. This is a natural preference, and one which we can easily understand.

There is general agreement, among those concerned with the publication of journals similar to ours, that a scientific section is needed and that it is difficult to obtain sufficient articles of a proper quality. Possible answers to this problem include the use of solicited articles, of review-type articles, and symposium-like issues such as these. Lest anyone think these just occur when wanted, I will tell you they are not easy to obtain. In addition to planning ahead six months to a year for such numbers, they require the follow-up of someone intensely interested—supplied in our cases by Drs. Morgan, Whittington, and Preheim. Considering the problems involved we feel pleased that three of these came to fruition. There were some others in various stages of planning which have not, so far, materialized. We hope that the coming year will see more such issues.

I did not include our annual KUMC issue among

the newcomers, for it is special in its own way. Now 17 years old, it is a feature anticipated each year with eagerness, as the largest single issue, and offering our greatest assortment of scientific papers. Again this year it surpassed its predecessors, and we are greatly indebted to Dr. Jesse D. Rising, who, as the JOURNAL's Associate Editor in the Medical Center, performed the extensive task of stimulating, assembling, and editing the papers for this number. We are most fortunate to enjoy the spirit of cooperation which exists between KUMC and the Society, and hope our annual KUMC issue will continue for many more years.

I could not make this report without recognizing—sincerely though inadequately—the services of Drs. David Gray, Richard Greer, Dwight Lawson, and John Segerson. As the members of the Editorial Board, their work and help in policy matters as well as the evaluation of manuscripts has been essential. They are all wonderful in their willingness to help. Drs. Gray and Lawson complete their current appointments to the Board during this meeting, and I earnestly hope and recommend that the Council will reappoint them to the Board.

Mrs. Mary Rogers has continued to perform the daily work in the JOURNAL office, and during some of the busy weeks has "gone it alone," without help (or hinderance!) from the editor. It is most gratifying to have someone in her position that is capable and willing to go ahead with whatever work is necessary.

Mr. Oliver Ebel has, in addition to his many other duties, continued to supply the JOURNAL with a great deal of editorial material and a great deal of know-how whenever it was needed. His JOURNAL activities are less conspicuous to most of the Society members than are many of his other duties, but he carries to them the same efficiency, willingness, and drive that are so well known to you all.

The quantity of advertising has been less this year, in keeping with a trend which is general, and about which I told you a year ago. Consequently revenue has been lower than before, with the result that the JOURNAL's bank balance is a little less than a year ago, but nothing to require any additional subsidy from the Society. The cost of JOURNAL operation was nearly \$29,000, which makes it a fair sized business enterprise.

As I have said in previous years, I and the other members of the Editorial Board welcome and appreciate your comments, suggestions, and, if they are not *too* severe, your criticisms. It is your JOURNAL, and we would like to make it as nearly what you want as possible.

ORVILLE R. CLARK, M.D., *Editor*

Mr. Oliver E. Ebel, Executive Director, made a report on some of the activities of the Kansas Medical Society as related to the 1963 Kansas Legislature.

The President asked Orville R. Clark, M.D., Chairman of the Committee on Necrology to report the names of members who had died during the past year.

The President then asked the House to rise for a moment of silence in memory of these members.

The Reference Committee was called upon to introduce resolutions prepared from the reports of officers, councilors and committees. The Reference Committee consisted of Drs. Leland Speer, Lawrence W. Patzkowsky and Edward F. Steichen. A total of 63 resolutions were introduced, 57 from the Reference Committee and six were presented from the floor, most of them arising from component societies. Resolution No. 28 was a special resolution and was acted upon at the first House of Delegates on emergency motion.

RESOLUTION NO. 28

WHEREAS, the 104th Annual Session of the Kansas Society is on this date, Monday, April 29, 1963, held in Salina, Kansas, and

WHEREAS, F. E. Wrightman, M.D., Immediate Past President, is absent because of illness, and

WHEREAS, his presence is sorely missed, therefore *Be It Resolved*, that the undersigned wish him a speedy and complete recovery and every good wish for continued long and productive service to the practice of Medicine and hope for his continued active participation in the affairs of the Kansas Medical Society, and

Be It Further Resolved, that this resolution be adopted at this time and that it be immediately sent to Doctor Wrightman.

All members who were present signed their names to this resolution.

Second Session

The second session of the House of Delegates was held at the Salina Country Club beginning at 12:00 Noon on Wednesday, May 1, 1963.

The tellers reported the election results as follows:
PRESIDENT-ELECT: John C. Mitchell, M.D., Salina

FIRST VICE PRESIDENT: George E. Burket, Jr., M.D., Kingman

SECOND VICE PRESIDENT: James A. McClure, M.D., Topeka

SECRETARY: Leland Speer, M.D., Kansas City

TREASURER: John L. Lattimore, M.D., Topeka

AMA DELEGATE 1964-65: Clyde W. Miller, M.D., Wichita

ALTERNATE AMA DELEGATE 1964-65: William J. Reals, M.D., Wichita

The election of the Nominating Committee resulted in the following: Thomas P. Butcher, M.D., Emporia, Chairman; Oscar W. Davidson, M.D., Kansas City; Murray C. Eddy, M.D., Hays; Laurence S. Nelson, Sr., M.D., Salina; and Frederick E. Wrightman, M.D., Sabetha.

The President then asked E. Burke Scagnelli, M.D., President, Kansas Blue Shield, to report on Blue Shield. He read the following report:

Blue Shield

I welcome the opportunity to appear before you at this time. Certainly the complicated spectrum of medical economics is becoming more visible to the eye of every Kansas physician. Momentous and yet irreversible changes are occurring in medical economics, truly day by day. This is all part of the social upheaval that now has crept into the everyday life of all of us.

Significantly, the withholding system of taxation has so camouflaged and numbed the bite of the government that many of our peoples today seem to prefer to have the government furnish more and more of their individual security. Of course, this has moved into our own particular field of concern . . . medical security.

The fact that 75 per cent of the population, nationally, and in Kansas, have some kind of voluntary health insurance program is evidence that this is the system the public prefers. However, the public's insistence on a *convenient and reliable way* to finance health care will probably take precedence over any concern they may have that the system remain *voluntary*.

To the extent that voluntary systems don't meet expectations, the public tends to look to government for relief. For some reason, the government appears to many to be able to supply painless, convenient, and low cost solutions to problems. Now, it is worth noting here that most Kansans who have medical care coverage have selected Blue Shield—it remains the largest single plan with a growth last year of 22,000 members for a total of 575,000 members.

I identify as a main theme in these comments, however, that people want from voluntary prepayment some assurance of the level of their coverage. They want to be able to predict how much of the bill *they* will have to pay out of their pocket. It seems to me that this is an important part of the terms they have set for continuing to support voluntary systems. Whether we agree with this philosophy or not, the public tends to buy insurance with every expectation that it will pay most if not all of the bill.

It is considered judgement then, that *prepayment* is here to *stay*. It is our duty to make it *work*.

Let us be alive. Let us be awake to what is happening about us.

High taxation, installment buying, budget payments, fly now and pay later tactics have encouraged the public to purchase products and services up to the *maximum* of their present incomes and resources. Little or no funds are available to provide for the cost of major illness. Doctors and hospitals hence were swept into this prepayment economy. If prepayment were an *experiment* a decade ago, it is a *fact* of life now.

When Blue Shield started in Kansas 16 years ago, it was intended as a means of preserving voluntary medical care. At that time, it was most attractive to people of modest means; since then however, with inevitable advances in medicine, hospitals, facilities and cost, most everyone now finds it difficult to meet unexpected burdens of \$30 to \$60 a day without planned prepayment.

Medicine must not lag behind the economy in general. Peoples across the nation are demanding more complete and predictable medical coverage. They don't want to buy car insurance that just pays *up* to so many dollars for a fender, or bumpers, or headlights; or house insurance that pays *up* to so many dollars for paint, or bricks and shingles, they want more adequate coverage.

Similarly, in *medical* prepayment, they don't want *up* to so many dollars for tonsils, or appendix or stomach, they want, and are willing to pay for the entire appendectomy, if you just give them the chance.

Gentlemen, this is called service benefits . . . that is, benefits in full, for a service performed. Is this too self confining, too unembraceable! A service benefit Blue Shield in Kansas, at *meaningful* levels, would do more to make our good intent acceptable, understood and secure to our subscribers *and ourselves* than any other move we have made in medical economics in the past century. *The label won't cure if the bottle is empty*. Voluntary prepayment *won't* succeed if it is not *meaningful*. In the past two years, some 68 counties have applied and received Blue Shield Schedule 3 programs for full service benefits. It is not my intent to suggest that the remaining counties accept such a program. But I do know this, that service benefits is the hallmark of Blue Shield, and without its label, *our* bottle is empty.

I believe people confidently feel that doctors are the logical ones to supervise the whole arena of medical-surgical care. The point of my comments to you today is to emphasize that we have just a very little time to respond to these challenges and to find answers that are fair to both the providers and users of medical services. I am confident we can meet the

future by a determination on our part to work together to support new and imaginative approaches to financing health care—and Blue Shield is our best instrument for accomplishing this.

It is my considered opinion that the people of Kansas have asked us, *have challenged us* to give them an adequate, fair and acceptable plan for payment of doctor fees. We must make every attempt—and soon—to deliver, lest in our greatest hour of medicine, we fail not in the quality of our product, but in our ability to deliver the package.

Kansas Blue Shield is continually trying to bring itself closer to the individual physician. Yearly meetings between the Executive Committee of the Society and Blue Shield are occurring and are most productive; county medical societies have been asked and have given permission for time to be allotted to their local Blue Shield physician representative to make announcements of Blue Shield importance at their meetings. I have brought a possible approach to the House of Delegates in regards to tax exempt withholding of a per cent of Blue Shield payments as a means of establishing a retirement program for doctors in Kansas which would avoid the employee participation aspect of Keogh-type funds. (I have asked this to be tacked onto another resolution which would give Blue Shield permission to make studies to present to your Council at a later date.)

The institution next year of electing Blue Shield Board members by ballot vote of all physicians will be started. New electronic equipment will make Blue Shield invaluable in gathering statistics on fees, usage, specialty matters, etc., which should be of tremendous value to the Medical Society.

These many moves by Blue Shield have all been made in an effort to make you—the individual physician—more aware of the fact that it is *indeed you* who ARE Blue Shield.

It has been a long and—for some unknown reason—hard task on the part of each succeeding Blue Shield president to dispel the notion that it is just another insurance company. It is *not*. Its legal title is the *Kansas Physicians Service, Inc.*—founded by you, supervised by you and *controlled* by you. It has all the qualifications to become the economic arm of your society. As its presiding officer, I can say it stands ready to continually further your best interests in whatever endeavor or direction you so dictate.

E. BURKE SCAGNELLI, M.D., *President*

RESOLUTION NO. 1

Councilors' Reports

WHEREAS, the majority of the seventeen (17) councilors prepared written reports published in the handbook, and

WHEREAS, these reports contain material of interest, such as an increase in membership in several districts, the organization of speakers' bureaus in some, meetings with the local bar associations and paramedical groups, public relations programs including one district with a sustaining radio program, at least one district making an assessment for AMEF, a notation that several report to their societies the business attended to at meetings of the Council, and one large district reporting that 75,000 letters were sent to patients regarding the King-Anderson bill, and

WHEREAS, there are many other items of interest in these councilors' reports, therefore

Be It Resolved, that it is recommended these reports be read in detail by the membership and that the House of Delegates express its thanks to the councilors for their service to the Kansas Medical Society, and

Be It Further Resolved, that these reports be accepted.

RESOLUTION NO. 2

Kerr-Mills

WHEREAS, the implementation of the Kerr-Mills Bill for the State of Kansas has been endorsed by the House of Delegates, and

WHEREAS, the Council has throughout the year and especially while the Kansas legislature was in session, reviewed basic principles upon which the medical profession might agree relating to health care of the aged and implementation of the Kerr-Mills bill, and

WHEREAS, the Council has formulated eight basic policies relating to the cost of illness for Society endorsement as a guide in the development of programs related to the cost of illness, therefore be it

Resolved, that the following eight basic policies be adopted as Society policy.

1. Personal medical care is primarily the responsibility of the individual. When he is unable to provide this care for himself, the responsibility should properly pass first to his family, then to the community, the county, and the state. Only when all these fail should the Federal Government be called upon, and then only to function in conjunction with the other levels of government, and in the order listed above.

2. The principle of freedom of choice should be preserved for all health services.

3. The prepayment or insurance principle will best protect the individual against the costs of medical care. Such programs should provide a broad range of benefits and should be available to persons of all ages.

4. Persons financially able to prepay their own expenses should be expected to do so, but should be encouraged rather than compelled to do so.

5. The medical profession has an obligation, to-

gether with the Department of Social Welfare, to provide the indigent of this state with necessary health care at maximum fiscal efficiency.

6. The sections of the Kerr-Mills law concerned with Medical Assistance for the Aged are intended to provide health services to those individuals who are not otherwise eligible for or in need of public assistance, but who would be forced to seek such assistance in the event of extended or catastrophic illness. It is not the intention of the law that such funds would replace the state financing of existing programs, or replenish general funds.

7. Medical Assistance for the Aged under the Kerr-Mills law is intended to supplement, rather than to replace, individual prepayment or health insurance.

8. Medical Assistance for the Aged under the Kerr-Mills law should provide any type of treatment or facility medically necessary to the individual's care, but only to the degree that the costs of those services if paid from the individual's resources would cause such reduction in his standard of living as to require him to apply for public assistance.

RESOLUTION NO. 3

Medical Assistance for the Aged

WHEREAS, the Council has endorsed certain specific principles for the implementation of the Kerr-Mills law in this state, therefore be it

Resolved, that the following statements be adopted as Kansas Medical Society policy in this regard.

1. Because Medical Assistance for the Aged is designed to protect the individual from the necessity of accepting Old Age Assistance, the administration of the two programs in Kansas should be separate to such degree that this fact is instantly and permanently apparent.

2. Benefits should be provided in sufficient quantity to ensure the recipient of MAA that the cost of health care will not necessitate a reduction in his standard of living for the duration of his eligibility.

3. Eligibility should contain deductible requirements after which MAA would cover the total cost. Deductibles should vary with personal resources, except that premium payments for health insurance would serve to satisfy deductible requirements.

4. A pilot study should constitute the original implementation of MAA. It is recommended that the Legislature designate an appropriate agency which shall administer MAA as a separate division from OAA. In order that this law may equitably serve all potential recipients, it is advised that local administration offices be established in each county.

5. The Kansas Medical Society concurs with the Governor of Kansas in his recommendation that the 1963 Legislature authorize an increase of one mill in

the county welfare levy to aid in financing a program of MAA for Kansas. The Legislature is requested to establish a certain fraction of this additional one mill levy to be identified for the exclusive use of MAA.

6. The Kansas Medical Society will cooperate with the Governor, with the Legislature and the officially designated agency at the state and county levels to bring the people of this state a sound MAA program with the greatest possible economy in cost.

RESOLUTION NO. 4

KaMPAC

WHEREAS, the Council has reviewed the activities of the Board of Directors of KaMPAC, and

WHEREAS, the Council believes each physician should express his interest in good citizenship in many ways including his participation in KaMPAC, therefore be it

Resolved, that the Kansas Medical Society recommends to the Board of Directors of KaMPAC that this organization and its work be continued, and

Be It Further Resolved, that the Board of Directors of KaMPAC be invited to present an audit of members to each meeting of the Council and at each meeting of the House of Delegates.

RESOLUTION NO. 5

Student Loan Fund

WHEREAS, the Kansas Medical Society as an organization and its individual members have over the years contributed to a student loan fund for the medical students at the University of Kansas School of Medicine, and

WHEREAS, many students are now utilizing loans from this fund in the furtherance of their professional education, and

WHEREAS, this money is being returned and reutilized and being made available to students at a very low rate of interest, and

WHEREAS, the newly created AMA sponsored E.R.F. loan program is a national project, therefore be it

Resolved, that E.R.F. is a nationally sponsored project about which physicians throughout the nation receive their information from the American Medical Association and those wishing to do so shall contribute directly to the American Medical Association without the Kansas Medical Society entering into this project, and

Be It Further Resolved, that the Kansas Medical Society shall continue its interest in the Kansas Medical Society student loan fund because this is money locally raised to be used by students at the University of Kansas School of Medicine and that contributions to this fund will continue to be accepted.

RESOLUTION NO. 6

District Societies

WHEREAS, during recent months at least two multi-county district societies have been organized, and

WHEREAS, these appear to be functioning successfully to the added advantage of the membership in the area involved, and

WHEREAS, there still remain within this state several small component societies, and

WHEREAS, the by-laws adopted by the House of Delegates recommend the formation of multi-county societies, therefore be it

Resolved, that the House of Delegates once again express its hope that small county medical societies will unite into district societies, and

Be It Further Resolved, that the Executive Office again advise these county medical societies of such recommendations on behalf of the House of Delegates.

RESOLUTION NO. 7

Osteopathy

WHEREAS, the School of Osteopathy at Los Angeles has recently been converted to a medical school which action granted degrees of doctor of medicine to the graduates of the Los Angeles School of Osteopathy, and

WHEREAS, such degrees of medicine are at this time recognized only in the State of California, and

WHEREAS, the Menninger School of Psychiatry at Topeka has received at least one application from a doctor of medicine in California having been granted his license by reason of the changed status of the Los Angeles School of Osteopathy, a request to be enrolled for residency training in psychiatry at the Menninger School, and

WHEREAS, the Menninger School of Psychiatry submitted this question to the Council for a decision as to whether such students should be accepted, therefore

Be It Resolved, that the Kansas Medical Society inform the Menninger School of Psychiatry that the Society does not object to the residency training of all medical doctors from the State of California with permission of the Council on Medical Education and Hospitals of the American Medical Association.

RESOLUTION NO. 8

This resolution was not adopted.

RESOLUTION NO. 9

Informed Consent

WHEREAS, the Supreme Court of Kansas revised its previous decision on informed consent, and

WHEREAS, the pertinent paragraphs of this decision relating to informed consent have been published in THE JOURNAL OF THE KANSAS MEDICAL SOCIETY and have been mailed in a letter from the President to each member of the Society and appear in the Handbook, therefore

Be It Resolved, that the Kansas Medical Society notes this decision and recommends that the membership avail itself of this information as the basis upon which physicians practicing in this state shall obtain authorization consenting to care.

RESOLUTION NO. 10

Emergency Medical Care

WHEREAS, the Health Education division of the Kansas State Board of Health brought to the attention of the Emergency Medical Care Committee a course on "Immediate Care of the Sick and Injured" designed to teach advanced first aid techniques to those persons already working with the sick and injured who need emergency care, and

WHEREAS, the Nebraska College of Medicine has most successfully conducted a course on "Immediate Care of the Sick and Injured" for the past two years, training members of the nursing profession, ambulance personnel, members of the police and fire rescue squads, etc., with gratifying results, and

WHEREAS, the University of Kansas School of Medicine is interested and may offer a similar course for lay and professional people in Kansas sometime later this year, and

WHEREAS, the membership of the Emergency Medical Care Committee believes that such a course should be taught only with direct medical supervision, with teaching to be done by medical doctors, and

WHEREAS, the committee feels that a course of this type is in the best interests of the public, therefore

Be It Resolved, that in the event that a course on "Immediate Care of the Sick and Injured" is offered through the University of Kansas School of Medicine, that the Kansas Medical Society endorses the concept of such a course and commend the University of Kansas School of Medicine for its willingness to undertake the work load necessary to prepare and to present a course of this type to paramedical people working in the emergency care field.

RESOLUTION NO. 11

Emergency Resources

WHEREAS, the Governor has established a Kansas Emergency Resources Board in cooperation with the

Executive Office of the President, Office of Emergency Planning, and

WHEREAS, this board is charged with the responsibility of developing an emergency action plan designed to provide for a wide variety of emergency situations, including limited or conventional war, as well as nuclear attack, and

WHEREAS, representatives from the organizations working in the field of health have been appointed by the Governor to serve on the board with business and professional leaders in the field of Construction, Electric Power, Food, Manpower, Petroleum, Gas, Solid Fuels, Production, Public Information, Service Trades, Communications, Transportation, Water, Economic Stabilization, and

WHEREAS, the State Emergency Resources Management Board is responsible for determining state-wide (1) what resources are available; (2) to what needs these resources can be applied; (3) how they can be most efficiently used; (4) the extent to which they are in excess or short of survival and recovery needs; and also to (5) administer government controls, as necessary, to channel resources to the most essential activities; (6) to issue policies and directions on the relative urgencies and priorities of demands on state resources; (7) assist the chairman and the board in adjudicating conflicting claims on resources and short supplies; (8) to determine requirements for essential resources; (9) allocate resources to essential uses; (10) administer controls over the production distribution of essential resources and provision of essential services; (11) direct emergency management officials and organizations situated at principal production and distribution centers within the state; (12) carry out available federal policies and guidance as to resources, management and coordinate action with federal officials, therefore

Be It Resolved, that the Kansas Medical Society, recognizing the need for a State Emergency Resources Management Board and an Emergency Action Plan, pledges to the Governor the complete cooperation of the Kansas Medical Society in the development of an emergency action plan for the State of Kansas.

RESOLUTION NO. 12

Indigent Health Care

WHEREAS, the Kansas State Board of Social Welfare has indicated its intention to authorize a single uniform system of health care in this state, and

WHEREAS, this will be accomplished through the payment of a sum to the vendors of medical services to be considered the minimum standard for health care of all welfare recipients, and

WHEREAS, on a state-wide basis the disbursement of the fund would be according to the following formula:

Hospitals	55.8%
Physicians	24.6%
Pharmacists	19.6%

therefore

Be It Resolved, that if the vendors in any political county of this state can and desire to do so, they may operate their own program and receive each month a sum equal to the agreed cost per month multiplied by the number of eligible persons if the vendors of each county will contract with the Board of Social Welfare that all services to be provided at this figure will be given at no further cost to the State Board of Social Welfare.

RESOLUTION NO. 13

Covered in Resolution No. 14, therefore, No. 13 was not adopted.

RESOLUTION NO. 14

Kerr-Mills

WHEREAS, the 1963 Legislature implemented the Kerr-Mills Law for Kansas, and

WHEREAS, this will be administered by the Kansas State Board of Social Welfare, and

WHEREAS, the Board of Social Welfare requests the principal vendors of health services to establish a formula for the operation of MAA, therefore

Be It Resolved, that the following shall be the policy of the Kansas Medical Society on this subject:

1. That selected representatives, such as the Council of the Kansas Medical Society, the Kansas Hospital Association and the Kansas Pharmaceutical Association meet as soon as possible but at least prior to July 1, when the Kansas law goes into effect,

2. That each association select not more than two members to serve as an advisory board to the Kansas State Board of Social Welfare,

3. That similar boards be created in each of the 17 Council districts of the Kansas Medical Society,

4. That these representatives at the state and district level report regularly to the professional associations they represent concerning their efforts, and

Be It Further Resolved

1. That every effort be made to provide MAA benefits in this state on a prepayment basis,

2. That since recipients of MAA are—except for illness—not eligible for OAA, the rate of payment for vendor services be above that paid under OAA. Medical benefits for MAA should be paid at a rate not lower than Blue Shield Plan A,

3. That, if possible, Blue Cross-Blue Shield should be named the fiscal agent because of their experience and facilities in this field,

4. That a deductible and, if feasible, a co-insurance principle be written into benefit provisions under

MAA so that the broadest possible benefits may be available to the largest number of potential recipients,

5. That every effort be utilized to retain the separation of MAA from all categories of welfare because this program was designed to provide specific benefits to persons which will prevent them from requiring public assistance.

RESOLUTION NO. 15

Drivers License Standards

WHEREAS, the Kansas Legislature appears determined to reduce motor vehicle accidents in this state, and

WHEREAS, the Legislature exhibited interest in visual acuity as one standard upon which the issuance of drivers licenses may be based, and

WHEREAS, the medical profession recognizes a variety of physical and emotional conditions as equally hazardous to safe driving, and

WHEREAS, the House of Delegates in 1962 recommended that the Committees on Conservation of Eyesight, on Conservation of Hearing and Speech, on Mental Health and on Safety prepare a statement concerning physical and emotional standards that shall be met for the issuance of drivers licenses, and

WHEREAS, some of these committees, through study of laws in other states, have prepared such material, therefore,

Be It Resolved, that the above named committees and any other appropriate committee, first separately and then together, prepare a health standard for the issuance of drivers licenses that may reasonably be enacted and enforced as law, and

Be It Further Resolved, that this combined report be submitted for approval to the 1964 Kansas House of Delegates.

RESOLUTION NO. 16

Workmen's Compensation

WHEREAS, the Legislature directed the Legislative Council to study medical and legal fees as they relate to Workmen's Compensation, and

WHEREAS, the Legislative Council will recommend legislative action on this subject in 1965, therefore

Be It Resolved, that the Committee on Industrial Medicine be authorized to assist the Legislative Council in its study of medical fees under Workmen's Compensation and in its understanding of the procedures for which these fees are paid.

RESOLUTION NO. 17

Basic Science

WHEREAS, the Legislature directed the Legislative Council to study the operation of the Healing Arts

Board and the Basic Science Board as to the examination of applicants for basic science certificates and to make recommendations to the 1965 Kansas Legislature, and

WHEREAS, this subject is of importance to the Kansas Medical Society, therefore

Be It Resolved, that the Executive Committee be authorized to re-examine the Healing Arts and the Basic Science laws and their operation in this state, and

Be It Further Resolved, that an effort be made by the Executive Committee to obtain a uniform opinion on this subject by both boards and by the professional associations represented on the Healing Arts Board, and

Be It Further Resolved, that if the Executive Committee then recommends amendments to either the Healing Arts or the Basic Science Acts these recommendations shall be mailed to the secretary of each component medical society in this state, and

Be It Further Resolved, that should such report be mailed prior to January 1, 1964, the president shall then call a special meeting of this House of Delegates between February 15 and February 28, 1964 for the purpose of acting upon these recommendations, and

Be It Further Resolved, that an adequate knowledge of each of the five basic sciences must be demonstrated by each practitioner of the Healing Arts in the interest of public safety before he shall be issued a license to practice in this state, and

Be It Further Resolved, that the president notify the chairman of the Legislative Council that the Kansas Medical Society offers its assistance in this study.

RESOLUTION NO. 18

Uniform Practice Act

WHEREAS, the Council of State Governments, with representatives of all states, recommends to the various state legislatures uniform laws upon different subjects, as for example, narcotics control, and

WHEREAS, this Council of State Governments is now studying the subject of a uniform medical practice act which is intended to leave for each state the decision of original licensure, but will provide for an easier means for obtaining reciprocity among states, and

WHEREAS, the Kansas representative on the Council of State Governments requested advice from the Kansas Medical Society on this subject, therefore

Be It Resolved, that the president appoint a committee, on which one member shall be the secretary of a Healing Arts Board, to advise the Kansas representative to the Council of State Governments regarding views of this Society on this subject.

RESOLUTION NO. 19

Kansas Blue Shield

WHEREAS, there is great misunderstanding among members of the Legislature and on the part of the public on the purpose and the operation of Blue Shield in this state, and

WHEREAS, some members of the Legislature attempted to enact legislation to alter the Blue Cross and Blue Shield programs, and

WHEREAS, similar attempts in other states give this the appearance of a nationally inspired project, and

WHEREAS, Kansas Blue Shield was started by the Kansas Medical Society and is still sponsored by this Society, and

WHEREAS, the continued successful operation of Blue Shield and its continued support by physicians and the public is essential to the people of this state, and

WHEREAS, Blue Cross is of equal importance to the hospitals and, also, to physicians and the public, therefore

Be It Resolved, that the Kansas Medical Society

1. Prepare a list of opinions from physicians, hospital administrators, legislators and subscribers concerning desired alterations in Blue Cross-Blue Shield;

2. Meet with the Governing Board of Blue Cross-Blue Shield to discuss these suggestions;

3. Attempt to obtain the adoption of whatever improvements can be made;

4. Provide accurate information to correct misunderstandings, and

Be It Further Resolved, that it is the intent of this Society to encourage every physician to render good care to all persons at reasonable cost and in a manner most efficient, and

Be It Further Resolved, that it is the intent of this Society that Blue Cross and Blue Shield shall give to the public an economical means for budgeting health care costs, and

Be It Further Resolved, that this House of Delegates authorize the officers and the Council to act in any manner, not inconsistent with other actions taken by this House, to bring the people of this state the best possible prepayment program for hospital and health costs.

RESOLUTION NO. 20

Coroners

WHEREAS, the Kansas Legislature enacted a law under which the thirty-eight district judges of this state shall each appoint a coroner who then may appoint deputy coroners as needed, and

WHEREAS, the local medical societies of each judicial district shall, before January 1, 1965, nominate two or more persons licensed to practice medicine and

surgery in Kansas as candidates for this position, therefore

Be It Resolved, that the Committee on Pathology submit necessary information outlining the duties and the responsibilities of the coroner and his deputies, defining procedures to be followed in that office and creating whatever report forms may be required, and

Be It Further Resolved, that the Committee on Pathology arrange that the University of Kansas School of Medicine conduct a seminar on forensic pathology which all coroners and their deputies shall agree to attend as a condition of their appointment.

RESOLUTION NO. 21

State Medical Examiner

WHEREAS, the Kansas Legislature accepted a portion, but not everything, recommended by the Committee on Pathology, and

WHEREAS, the position of State Medical Examiner was not created and,

WHEREAS, this is essential to the successful operation of the coroner service in this state, therefore

Be It Resolved, that the Kansas Medical Society request the Kansas Legislative Council to accept this subject for study during the next two years, and

Be It Further Resolved, that the Committee on Pathology be authorized to assist and advise the Legislative Council in this study.

RESOLUTION NO. 22

Probate Code

WHEREAS, the Legislature directed the Kansas Judicial Council to recommend revisions of the Probate Code for consideration by the 1965 session of the Legislature, and

WHEREAS, many antiquated and cumbersome sections of the Probate Code relate to the care of mental illness and its treatment, and

WHEREAS, the Committee on Mental Health has for many years recommended improvements in definitions, commitment procedures, and in other sections of these statutes, therefore,

Be It Resolved, that the Committee on Mental Health begin at its earliest convenience to offer assistance to the Judicial Council on all subjects within the Probate Code that relate to mental illness, and

Be It Further Resolved, that the Committee on Child Welfare begin, at its earliest convenience, to offer assistance to the Judicial Council on all subjects within the Probate Code that deal with the health of children.

RESOLUTION NO. 23

Battered Child Syndrome

WHEREAS, the Attorney General of Kansas requests the assistance of the medical profession in pro-

viding a means for detecting the physical abuse of young children toward the end that such assault on the part of their parents may be curbed, therefore

Be It Resolved, that the Committee on Relations With Bar Association study this problem and, with the approval of the Attorney General, present the Committee findings to the Council and the House of Delegates for approval.

RESOLUTION NO. 24

Wheat Referendum

WHEREAS, the Kansas Farm Bureau has upon numerous occasions in the past exerted significant effort in support of legislative and congressional programs relating to health at the request of the Kansas Medical Society, and

WHEREAS, this support by the Kansas Farm Bureau and its 80,000 members has been of great value and often a decisive factor in the outcome of important items relating to health, and

WHEREAS, the Kansas Farm Bureau is currently concerned upon the matter of the wheat referendum which question represents a significant struggle between free enterprise and socialism, therefore

Be It Resolved, that the Kansas Medical Society support the Kansas Farm Bureau in its attempt to preserve free enterprise, and

Be It Further Resolved, that the Kansas Medical Society distribute material upon this subject which may be submitted by the Kansas Farm Bureau.

RESOLUTION NO. 25

Congressional Contact

WHEREAS, numerous state medical societies annually send large delegations to Washington for a group meeting with their senators and congressmen, and

WHEREAS, this is reported to be appreciated by the elected officials of these states, and

WHEREAS, Kansas takes pride in the senators and congressmen representing this state, and

WHEREAS, they have each at different occasions expressed an interest in the opinion of the Kansas Medical Society on Federal legislation relating to health, and

WHEREAS, it appears there will be questions of vital importance to the Kansas Medical Society debated in the Congress during the next few months which will require a decision on the part of the senators and congressmen of this state, therefore

Be It Resolved, that if and when an occasion for a visit to Washington appears important, the Council is authorized to request the president and two (2) additional persons to go to Washington where they shall meet with the Kansas Congressional delegation.

RESOLUTION NO. 26**Professional Service Corporations**

WHEREAS, a bill was sponsored in the Legislature by the Kansas Bar Association and supported by numerous professional associations, including the Kansas Medical Society, to permit persons licensed to practice a profession to incorporate for the purpose of deferring tax payments upon a portion of their income, and

WHEREAS, this bill failed to pass, and

WHEREAS, the adoption of such a law will represent a step toward equalizing the tax structure for the self-employed in professional fields and business, and

WHEREAS, the adoption of such a law will supplement the meager present benefits of the Keogh Law, therefore

Be It Resolved, that the Committee on Medical Economics be authorized to work with other interested individuals and groups and with the medical profession of this state toward the end that a favorable legislative opinion on this subject may be obtained in 1965.

RESOLUTION NO. 27**Shawnee County Medical Society**

WHEREAS, many physicians in this state performed services in behalf of the Kansas Medical Society during the 1963 session of the Kansas Legislature, and

WHEREAS, a large number of physicians in Topeka performed an outstanding service to this Society by giving health care to members of the Legislature and to their families, and

WHEREAS, every physician who was asked to do so, immediately altered his schedule to give professional service to members of the Legislature and their families, and

WHEREAS, this service creates a vast amount of good will among members of the Legislature, therefore

Be It Resolved, that the Shawnee County Medical Society and its individual physicians be extended an expression of gratitude for their most significant contribution during this legislative session.

RESOLUTION NO. 28

Passed at first House of Delegates meeting.

RESOLUTION NO. 29**Relative Value Scale**

WHEREAS, the Committee on Fee Schedules has been asked to determine why more than one conversion factor becomes necessary when the Relative

Value Scale is used as a basis for the construction of a fee schedule such as the Senior Citizens contract currently offered by Blue Shield, and

WHEREAS, the Fee Committee believes three conversion factors for a fee schedule for the Senior Citizens contract is the most equitable present use to which the Relative Value Scale can now be employed, and

WHEREAS, for the time being the Senior Citizens program will utilize the Kansas Relative Value Studies as a basis for its fee schedule, and that surgical payments be based on the Relative Value Study at \$2.35 a point; that anesthesia be paid at a ratio of \$2.35 per point; that in-hospital medical care be paid at the rate of \$3.90 per point; and that radiology be paid on the basis of \$3.00 per point, therefore

Be It Resolved, that the Kansas Medical Society approves the use of separate fee conversion factors for the Senior Citizens contract, and

Be It Further Resolved, that the Fee Committee be authorized to change the conversion factors from time to time, as may be necessary.

RESOLUTION NO. 30**Relative Value Study**

WHEREAS, it should be understood by each physician of this state that a Relative Value Study is a fluid document to be amended as necessary, and

WHEREAS, it should be understood that a Relative Value Study is not a fee schedule, but a convenient vehicle upon which a fee schedule can be constructed, and

WHEREAS, the committee believes there should be a way to resolve the existing necessity of utilizing more than one conversion factor for a single fee schedule, therefore be it

Resolved, that the Committee on Fee Schedules be authorized to study this problem further as follows:

1. To make an analysis of the stated normal charges listed by physicians on their Blue Shield reports as a means for arriving at an average charged fee for a service as stated by the physicians of this state, and

2. To correlate the above average figure with the averages as obtained from the survey of charges made by the Kansas Medical Society several years ago, and

3. With the above information, this committee may then recommend changes of some point values, if necessary, in the Relative Value Scale which will make possible the future use of this document as a vehicle upon which a fee schedule may be constructed through the use of a single conversion factor, and

Be It Further Resolved, that the treasurer of the Kansas Medical Society be authorized to reimburse Kansas Blue Cross-Blue Shield for the cost of conducting this survey.

RESOLUTION NO. 31**Nursing Homes Standards**

WHEREAS, the Committee on Gerontology has assisted the State Board of Health in the formulation of rules and regulations to cover the minimum standards for nursing homes, and

WHEREAS, these regulations represent the present standard for licensure of nursing homes in Kansas, and

WHEREAS, physicians have an interest in the standards of care provided their patients in nursing homes, therefore

Be It Resolved, that the Committee on Gerontology be directed to serve the Licensing Department of the State Board of Health in a liaison capacity toward the end that adequate medical nursing domiciliary and general health care can be provided persons residing in nursing homes.

RESOLUTION NO. 32**Gerontology**

WHEREAS, the Kansas Nursing Homes Association has requested the Committee on Gerontology to assist it in the preparation of an accreditation system modeled somewhat after the National Joint Accreditation Commission or the Kansas Voluntary Council on Standards for Hospitals but differing according to the general difference between a hospital and a nursing home, and

WHEREAS, your Committee on Gerontology believes this can represent a service to the persons residing in nursing homes, therefore

Be It Resolved, that the Committee on Gerontology be directed to serve the Kansas Nursing Homes Association in establishing a state accreditation council.

RESOLUTION NO. 33**Small Hospitals**

WHEREAS, a project of many years' effort to establish the Kansas Voluntary Council on Standards for Hospitals has during this past year been accomplished, and

WHEREAS, this council consists of four (4) Doctors of Medicine: H. St. Clair O'Donnell, Ellsworth, Chairman; Richard H. Hill, Meade; L. W. Patzkowsky, Kiowa; E. B. Struxness, Hutchinson, and of four (4) hospital administrators: C. C. Erickson, Phillipsburg; A. J. Evans, Hays; M. H. Ewert, Newton; L. C. Reid, Liberal, and

WHEREAS, an invitation has been sent to each hospital with fewer than 25 beds to accept these standards as the minimum standards of operation within that hospital, therefore

Be It Resolved, that the House of Delegates again express its approval of this project, and

Be It Further Resolved, that the House of Delegates recommend to the professional staff of all hospitals not already seeking Joint Commission hospital accreditation, not already accredited or with fewer than 25 beds apply these standards in the operation of the hospital.

RESOLUTION NO. 34

Similar to Resolution No. 16, therefore this resolution was not adopted.

RESOLUTION NO. 35**Obstetrics Guide**

WHEREAS, the Maternal Welfare Committee of the Kansas Medical Society is interested in all problems pertaining to maternal care, and in prevention of maternal morbidity and mortality, and

WHEREAS, every maternal death in Kansas has been carefully reviewed by this committee for the past fifteen (15) years for the purpose of continuing education of the medical community in these matters, and

WHEREAS, the experience of the obstetricians and general practitioners on the committee has accumulated a particular pertinent body of information about obstetrical practice in Kansas, and

WHEREAS, the Maternal Welfare Committee has prepared a suggested guide concerning maternal care and obstetric practice embodying the results of its findings and experience over these number of years, therefore

Be It Resolved, that the Kansas Medical Society recommends that the "Suggested Guide on Obstetric Practice" be published and distributed to the membership.

RESOLUTION NO. 36

This resolution was withdrawn.

RESOLUTION NO. 37**Retirement Trusts**

WHEREAS, the 1961-62 Congress of the United States passed the Keogh Bill authorizing income tax deferment of funds set aside for retirement, and

WHEREAS, no final regulations have been set up by the Internal Revenue Service, and

WHEREAS, the Legal Department of the American Medical Association has not yet released its findings and recommendations to physicians and groups of physicians for implementation of the provisions of the Keogh Bill, therefore

Be It Resolved, that physicians of Kansas be advised to wait until the final regulations or recom-

mentations are established before setting up a retirement plan under the provisions of the Keogh Bill, and

Be It Further Resolved, that the Committee on Medical Economics be authorized to study the formation of Trusts or Foundations for the benefit of the Kansas Medical Society members, and

Be It Further Resolved, that if the Committee on Medical Economics finds that such Trusts or Foundations are desirable, the Committee is authorized to set up such Trusts or Foundations for the voluntary participation of the Kansas Medical Society members, after adequate presentation and authorization by the Council.

RESOLUTION NO. 38

Nurses

WHEREAS, nursing care can increase the efficiency of a physician's effort, therefore be it

Resolved, that the Executive Committee appoint a special committee to work closely with the nursing profession, that it work with the University of Kansas School of Medicine to provide ample and high quality educational facilities for nurse education in Kansas, and that it explore the broad range of work opportunities for nurses.

RESOLUTION NO. 39

Economics of Health Care

WHEREAS, there has been noted an increased public criticism of the cost of health services, especially in prepaid health insurance and hospitalization, and

WHEREAS, until now there appears to be nowhere in Kansas the facility for sound research on this subject as it relates to the provider of these services, and

WHEREAS, the University of Kansas through the reorganization of its department of environmental medicine might make great contributions toward knowledge in this area, therefore be it

Resolved, that the University of Kansas School of Medicine be encouraged to set up an office to study the problems of usage, insurance and related topics, and be it further

Resolved, that the Kansas Medical Society through existing committees or by any other means give full cooperation and assistance to this project.

RESOLUTION NO. 40

Alumni Fund

WHEREAS, the Kansas Medical Alumni Association has been an essential and deeply appreciated aid to the School of Medicine, and

WHEREAS, the support of work of this association will reflect benefit to physicians and to the public, and

WHEREAS, the Kansas Medical Alumni Association is now pledged to raise a fund of one million dollars, therefore, be it

Resolved, that the Kansas Medical Society give its complete support to this association and to the fund raising project and that the Society urge each individual physician to participate in the program through personal contributions and efforts.

RESOLUTION NO. 41

Federal Aid to Medical Students

WHEREAS, physicians and others have over the years contributed significantly toward student loan funds, and

WHEREAS, the student loan fund of the Kansas Medical Society is serving students at the School of Medicine at the University of Kansas, and

WHEREAS, the Congress is now considering a national tax supported medical student loan program, and

WHEREAS, a Federal program of this type will contribute toward one more control over the practice of medicine and will tend to cause a loss of interest in further private contribution, therefore

Be It Resolved, that the previous policy of this Society be emphatically reaffirmed to the effect that Federal subsidies to medical schools be limited to matching funds for the construction of buildings and unrestricted grants for research study, and

Be It Further Resolved, that Federal aid for loans to medical students be disapproved as not necessary and contrary to the philosophy of free enterprise, and

Be It Further Resolved, that other formulas to aid students through tax exemptions presently being considered by the Congress are favored because they will give desired benefits as needed without involving unwarranted Federal controls, and

Be It Further Resolved, that the president sent to each Kansas senator and congressman a copy of this resolution.

RESOLUTION NO. 42

Mental Health Survey

WHEREAS, rapid technological and social changes affecting the provision of psychiatric services to the citizens of Kansas are occurring, and

WHEREAS, the medical profession of Kansas recognizes its responsibility to provide professional leadership in planning and implementing psychiatric services, both private and public, and

WHEREAS, the Division of Institutional Management, Board of Social Welfare, is embarking upon a two-year period of comprehensive planning for mental health services, therefore

Be It Resolved, that the Kansas Medical Society

as a participant in comprehensive planning for mental health authorizes the president to appoint physicians who are members of the Kansas Medical Society, one of which shall be the chairman of the Committee on Mental Health, to serve on a medical review committee which shall report to the Council.

RESOLUTION NO. 43

Mental Health Congress

WHEREAS, the House of Delegates, at the time of the Annual Meeting in 1962, passed Resolution No. 20 in regard to participation in a Congress for Mental Illness and Health to be sponsored by the Council of Mental Health of the American Medical Association on October 4, 5, and 6, 1962, and

WHEREAS, it was resolved that the president of the Kansas Medical Society and the chairman of the Committee on Mental Health be authorized to attend, and further that the House of Delegates endorse and encourage the attendance of as many Kansas physicians as possible, and

WHEREAS, five representatives from each of three Kansas organizations, the Kansas Medical Society, the Kansas Association for Mental Health and the Kansas Psychiatric Association, at the request of the American Medical Association formed a Kansas Mental Health Congress Steering Committee, and

WHEREAS, the members of this steering committee attended the National Congress on Mental Illness and Health, held in Chicago, for the purpose of determining which problems in the field of mental illness in the State of Kansas were most pressing; to decide on a priority ordering of these problems; and to consider proposals and develop plans for carrying out positive programs aimed at alleviating priority problem areas in this state, and

WHEREAS, this steering committee has held three meetings since the Congress for the purpose of planning a Mental Health Congress for Kansas, and

WHEREAS, the Kansas Congress for Mental Health Steering Committee, working closely with the Kansas Academy of General Practice and the Kansas Association for Mental Health, has selected October 24, 1963, for the date of the first Kansas Congress on Mental Health to be held in Topeka, Kansas, immediately preceding the Annual Meetings of the Kansas Academy of General Practice and the Kansas Association for Mental Health, which will be held in Topeka, October 25-26, 1963, and

WHEREAS, the steering committee has suggested that the Congress be sponsored by the Kansas Medical Society in cooperation with the Kansas Chapter, Kansas Academy of General Practice, the Kansas Association for Mental Health, the Division of Institutional Management of the State Board of Social Welfare, and the Kansas Psychiatric Association, and

WHEREAS, the steering committee has further suggested a \$2.00 registration fee and further that the Kansas Medical Society, as sponsor, along with the cooperating organizations, each contribute \$100 to defray initial expenses of preparing for the Congress, with a refund to each organization of the unused portion of the contribution, therefore

Be It Resolved, that the Kansas Medical Society in cooperation with the Kansas Chapter, Kansas Academy of General Practice, the Kansas Association for Mental Health, the Division of Institutional Management of the State Board of Social Welfare, and the Kansas Psychiatric Association, sponsor a one-day Kansas Congress on Mental Health, on October 24, 1963, and

Be It Further Resolved, that a contribution of \$100 be allocated by the Kansas Medical Society to help with the initial cost of the Congress with the understanding that the unused portion of this money will be refunded to the Society.

RESOLUTION NO. 44

Membership Rosters

Be It Resolved, that future rosters of the membership of the Kansas Medical Society include the specialty, medical school, and date of graduation of all members as was done in the preparation of the 1959 roster of the Kansas Medical Society, and

Be It Further Resolved, that the office address and telephone number also be included, and

Be It Further Resolved, that the roster be published bi-annually.

RESOLUTION NO. 45

Records

WHEREAS, storage of correspondence and other records has become a space problem in the Executive Office, and

WHEREAS, microfilming of these records or storage in some other location would help to alleviate this problem, therefore

Be It Resolved, that the Executive Office be authorized to study these possibilities and others if need be and that upon reaching a decision recommend a plan to the Executive Committee for final approval.

RESOLUTION NO. 46

Receipts

WHEREAS, it has been the custom for the secretarial help of the Executive Office to prepare and mail individual receipts for individual American Medical Association dues, and

WHEREAS, this entails a considerable amount of work on the part of a secretary to prepare receipts for total membership of the Kansas Medical Society, and

WHEREAS, the Sub-Committee on Members of the Plans & Scopes Committee feel that such receipts might more properly be prepared by the local county medical society secretary, therefore

Be It Resolved, that the responsibility for preparing A.M.A. dues receipts be placed with the secretaries of the local county medical societies.

RESOLUTION NO. 47

I.B.M. Records

WHEREAS, Kansas Blue Cross-Blue Shield has expressed a willingness to make available its machine records system to the Kansas Medical Society for compilation of membership information, and

WHEREAS, this information would be most helpful in the preparation of new rosters, specialized membership mailings, vital statistics on physician members and other important membership uses, and

WHEREAS, there would be a nominal expense to the Kansas Medical Society for service and material, therefore

Be It Resolved, that the Executive Office of the Kansas Medical Society be authorized to utilize the machine records system of Blue Cross-Blue Shield, and

Be It Further Resolved, that the Executive Staff of the Kansas Medical Society and the Executive Staff of Blue Cross-Blue Shield be authorized to negotiate the details.

RESOLUTION NO. 48

Resolutions to House of Delegates

WHEREAS, the Committee on Plans and Scopes was first appointed one year ago, and

WHEREAS, this Committee was divided into five (5) separate subcommittees, and

WHEREAS, the magnitude of this project has exceeded early expectations, therefore

Be It Resolved, that the interim report of this Committee be accepted, and

Be It Further Resolved, that the Committee be extended one more year in the hope that recommendations for ways in which to increase the efficiency and the service of the Kansas Medical Society may be recommended to the House of Delegates in 1964, and

Be It Further Resolved, that arrangements be made to mimeograph all resolutions and that copies be made available to the First House of Delegates and to the Reference Committees.

RESOLUTION NO. 49

Hearing Survey

WHEREAS, the Committee on Conservation of Hearing and Speech requests the Society to endorse

the use of a U. S. Public Health Service grant under which the State Board of Health will develop a hearing conservation program for children in Kansas, and

WHEREAS, this subject was submitted to this Committee, therefore

Be It Resolved, that this program be endorsed.

RESOLUTION NO. 50

Diabetic Screening

WHEREAS, the State Board of Health has conducted a diabetic screening program since August, 1956 in which 57,738 individuals have participated and through which 1,362 cases have been detected, and

WHEREAS, such programs come to a county only upon request of the county medical society and the county health officer, therefore

Be It Resolved, that the House of Delegates approve the principle of screening tests provided they are sponsored by the local medical society and that the Committee on Public Health be authorized to consult with the State Board of Health for their proper implementation.

RESOLUTION NO. 51

Public Health

WHEREAS, the Kansas State Board of Health is occasionally requested to provide medical service as for example influenza immunization to highway patrolmen and medical emergencies which occur in the State Office Building, and

WHEREAS, the State Board of Health does not desire to practice medicine nor do its physician employees desire to participate in private practice, and

WHEREAS, these physicians render first aid in the case of an emergency only until such time as a private practicing physician may be obtained to accept responsibility for the case, therefore

Be It Resolved, that the House of Delegates expresses its confidence in the State Board of Health in its desire not to engage in the practice of medicine, but confining its activities to those areas of public health and welfare which fall within its realm.

RESOLUTION NO. 52

This resolution was not adopted.

RESOLUTION NO. 53

Accident Prevention

WHEREAS, one out of every seven persons now occupying a hospital bed is the victim of an accident, and

WHEREAS, the field of accident prevention and

public education should be an important part of the Kansas State Board of Health Program, and

WHEREAS, there is not at this time a full-time State Board of Health employee working in this field, therefore

Be It Resolved, that the Kansas Medical Society go on record as recommending that the Kansas State Board of Health consider the possibility of employing a full-time person in the capacity of Health Educator in Accident Prevention.

RESOLUTION NO. 54

Safety Belts

WHEREAS, automobile safety belts have been proved effective in saving lives and reducing the amount of injury in the event of an automobile accident, and

WHEREAS, the public looks to the physician for leadership and example in all areas pertaining to personal health, and

WHEREAS, many members of the medical profession are using safety belts in their automobiles, therefore

Be It Resolved, that the Kansas Medical Society urges all Kansas physicians to install and use automobile safety belts.

RESOLUTION NO. 55

Rural Safety Committee

WHEREAS, the Kansas Medical Society has been invited to be a charter member of the Kansas Rural Safety Committee, and

WHEREAS, under Article III of the Constitution, institutional membership in the committee shall include state organizations—private and governmental—which have major interests in and responsibility for the health and safety of the general public, and

WHEREAS, the purpose of the committee shall be to promote the coordination, development, and extension of all aspects of safety in Kansas including traffic, home, farm, and recreational safety, as well as safety in all other areas of environmental hazard, and

WHEREAS, the Committee on Safety of the Kansas Medical Society would work closely with the Kansas Rural Safety Committee in cooperation with the other member organizations, and

WHEREAS, many state safety programs including safety legislation will be coordinated through the Kansas Rural Safety Committee, therefore

Be It Resolved, that the Kansas Medical Society participate as a charter member in the Kansas Rural Safety Committee and further that the president be authorized to appoint two representatives to represent the Society.

RESOLUTION NO. 56

Committee on State Meeting Format

WHEREAS, the State Meeting Format Committee met to consider the 1964 Annual Session, therefore

Be It Resolved, that the invitation of the Shawnee County Medical Society be accepted and that the 1964 Annual Session be held in Topeka, and

Be It Further Resolved, that the State Meeting Format Committee be directed to invite the General Chairman and the Chairman of the Scientific Program to meet with them at the next meeting, and

Be It Further Resolved, that the House of Delegates authorize the general format for 1964 to be comparable to the format of the 1963 meeting held in Salina.

RESOLUTION NO. 57

Committee on Stormont Medical Library

WHEREAS, the Kansas Legislature passed a bill authorizing the Shawnee County Medical Society to accept responsibility for the operation of and Stormont-Vail Hospital for the housing of the Stormont Medical Library, therefore

Be It Resolved, that this be approved and that the Shawnee County Medical Society be commended for its initiative in this important project, and

Be It Further Resolved, that in the future the Stormont Medical Library Committee will be directed to serve in the liaison capacity for the benefit of the Shawnee County only as requested.

RESOLUTION NO. 58

Contributions for Postgraduate Courses

WHEREAS, from time to time funds for postgraduate medical courses may be made available by pharmaceutical houses, retail agencies or allied professional or health groups, and

WHEREAS, such funds can be used to advantage without prejudicing or compromising the donor or receivers, and

WHEREAS, full confidence of this organization is placed in the administrative personnel of our medical schools and elected officers of the Kansas Medical Society and component societies to exercise judgment in the selection and use of such funds, therefore

Be It Resolved, that contributions made for the specific purpose of furthering postgraduate medical education may be accepted and used at the discretion of responsible administrative medical personnel, and

Be It Further Resolved, that identification of such funds be limited to the name of the sponsoring agency, and

Be It Further Resolved, that the House of Delegates of the Kansas Medical Society meeting in Salina,

Kansas, May 1, 1963, approve these recommendations.

RESOLUTION NO. 59

This resolution was not adopted, but referred to Committee on Legislation.

RESOLUTION NO. 60

This resolution was not adopted.

RESOLUTION NO. 61

Covered in Resolution No. 12, therefore this resolution was not adopted.

RESOLUTION NO. 62

This resolution was not adopted, but referred to the committees on Child Welfare, Maternal Welfare, Mental Health, Public Health, and Relations with Bar Association for study.

RESOLUTION NO. 63

High School Debate Topic

WHEREAS, the high schools of this nation, and more particularly the state of Kansas, are using the topic of medical care for the aged as it applies to compulsory care under Social Security as opposed to the Kerr-Mills type of care, and

WHEREAS, this field of public education will be more thoroughly aired during the 1963-64 school year, it behooves each of us to help support our point of view, therefore

Be It Resolved, that each component medical society should contact each high school debate coach and school librarian in their respective communities, to help supply any material that they can to better inform their students of the medical program as fostered under the free enterprise system in a free society.

RESOLUTION NO. 64

Congratulations

WHEREAS, the 104th Annual Scientific Meeting of the Kansas Medical Society has been a tremendous success, and

WHEREAS, the Saline County Medical Society through its time and efforts has proved to be an outstanding host, and

WHEREAS, the facilities in Salina have been excellent for our meeting, therefore

Be It Resolved, that the Kansas Medical Society express its appreciation to the Saline County Medical Society for its magnificent endeavor, and to the Marymount College for the use of its buildings, and

Be It Further Resolved, that the Kansas Medical

Society will be most happy to return to Salina at the slightest hint of an invitation.

Morbidity Incidence Report

(Continued from page 270)

naturally occurring disease has been noted for at least two years.

To date, there have been no reports of encephalitis or other serious reactions following administration of the live attenuated vaccine to normal children. A few instances of convulsions, apparently of the febrile type and without known sequelae, have been recorded.

INACTIVATED MEASLES VIRUS VACCINE

The inactivated vaccine is composed of attenuated Edmonston strain measles virus propagated on monkey kidney or chick embryo tissue culture, and subsequently inactivated, concentrated and precipitated. The vaccine has been customarily administered, in field trials, in a three dose schedule at monthly intervals. Reactions to the vaccine are no more frequent than those seen after administration of alum precipitated products, such as diphtheria and tetanus toxoids. Serological conversion after three, monthly doses of inactivated vaccine is induced in 90 per cent or more of susceptible children. Antibody titers, however, are distinctly lower than those following the live vaccine and in most cases decline to undetectable levels over the following year. Preliminary data, however, indicate that these children, although without detectable antibody, demonstrate a booster response when given a fourth dose of vaccine.

Under the conditions of natural challenge, the vaccine has demonstrated an efficacy of between 80 and 95 per cent during the immediate six months following administration. Whether the protective effect of the vaccine persists beyond this time is not yet known.—*Surgeon General's Advisory Committee.*

**USE YOUR MEDICAL
LIBRARIES**

**YOUR LIBRARIAN WILL BE
HAPPY TO ASSIST YOU**



Personalities—IN KANSAS MEDICINE

William C. Dreese and **Thomas A. Turner** were inducted as Fellows in the International College of Surgeons at the annual meeting in Los Angeles in April. **Robert G. Rate**, regent for the ICS for the state of Kansas also attended the meeting. All three of the physicians are from Halstead.

E. Burke Scagnelli, Dodge City, was re-elected president of the Kansas Blue Shield at the annual meeting of the Board of Directors in Salina. Other officers elected to second terms included **Robert K. Purves**, Wichita, first vice president; **Charles S. Joss**, Topeka, second vice president; and **James L. McGovern**, Wellington, secretary-treasurer. Re-elected trustees to the board are **Charles M. White**, Wichita; **Carl C. Gunter**, Quinter; and **W. H. Walker**, Eskridge. **J. Gordon Claypool**, Howard, and **Sam Zweifel, Jr.**, Kingman, are newly-elected trustees.

Jack W. Welch, Halstead, attended the annual meeting of the American Association of Railway Surgeons in Chicago in April, where he presented a paper on thyroid disease. Dr. Welch also attended the annual meeting of the Southwestern Surgical Congress held in Mexico City in April.

Four Kansas City physicians, **Leonard F. Peltier**, **L. O. Litton**, **Philip C. Nohe**, and **C. L. Francisco**, conducted a diagnostic clinic for crippled children of Labette County. The clinic, sponsored by the Kansas Crippled Children Commission, the Labette County Medical Society, and the Kansas Society for Crippled Children was held in Parsons in May.

Floyd E. Dillenbeck, El Dorado, attended the

American Academy of General Practice convention held in Chicago in early April.

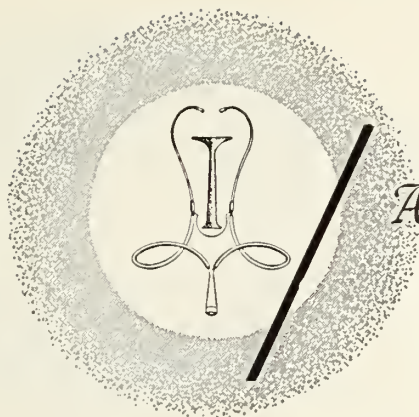
A Minnesota congressman and **Thomas Butcher** of Emporia debated medical care for the aged at Kansas University in April. The congressman supported the position taken by the U. S. Health, Education and Welfare Department, and Dr. Butcher, opposed the federal government's view in the debate sponsored by the All Student Council of the university.

Several Kansas physicians have been busy relocating or planning to relocate during the past months. **L. V. Borgendale** and **L. A. Clark**, both of Junction City, have moved to Wamego and are now in practice with **Bill L. Braden**. **Wayne G. Parker** has moved from Hoxie to Oberlin and has joined the medical staff of the Oberlin Clinic. **Norman G. Marvin** recently moved from Kiowa to Syracuse and is associated with **C. E. Petterson**. **Robert D. Wood**, Peabody, plans to move to Horton in July. He will join **James Scanlon** and **Valjean Converse** in their practice there.

Mildred J. Stevens, Garnett, is listed in the 1963 edition of *Who's Who in the Midwest*.

William C. Menninger, Topeka, addressed the 18th annual meeting of the Trustees of the Midwest Research Institute in Kansas City in May. Previous to addressing the trustees and their guests, Dr. Menninger was honored as the 1963 MRI citation recipient.

Marvin Gunn, Salina, and **Roger K. Wallace**, Manhattan, were guest speakers at the annual convention of the Kansas Society of X-ray Technicians in Salina in April.



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the DOCTOR'S CALENDAR. Notice of the session is posted in advance to allow the physician time to make preparations.

JULY

- July 8-19 Institute on the Administration of Medical Care for the Needy, Ann Arbor, Michigan. Contact: S. J. Axelrod, M.D., School of Public Health, Ann Arbor, Mich.
- July 12-13 International Conference on Renal Hypertension, Columbus, Ohio. Contact: John A. Prior, M.D., Ohio State University College of Medicine, Columbus, Ohio.
- July 15-19 Second International Conference on Congenital Malformations, New York City. Sponsored by The National Foundation-March of Dimes. Contact: Stanley E. Henwood, 120 Broadway, New York 5, N. Y.
- July 19-21 American Society of Human Genetics, New York City. Write Kurt Hirschhorn, M.D., New York University Medical School, New York 16, N. Y.

AUGUST

- Aug. 4-9 International Conference and Exhibit on Aerospace Support, Washington, D. C. Contact: R. S. Gardner, Industry Div. Committee, 345 E. 47th St., New York, N. Y.
- Aug. 11-14 American Society for Pharmacology and Experimental Therapeutics, San Francisco. Contact: H. George Mandel, Geo. Washington University School of Medicine, Washington 5, D. C.
- Aug. 19-23 International Congress of Clinical Chemistry, Detroit. Contact: D. G. Remp, M.D., Henry Ford Hospital, Detroit, Mich.

- Aug. 20-26 International Congress of Psychology, Washington, D. C. Contact: Michael Amrine, 1333 16th St. NW, Washington 6, D. C.
- Aug. 25-26 American Congress of Physical Medicine and Rehabilitation, Dallas. Contact: Glenn Gullickson, Jr., M.D., 30 N. Michigan Ave., Chicago 2, Ill.

POSTGRADUATE COURSES

- June 23-29 *General Practice Review*—University of Colorado School of Medicine, Denver. Contact: Office of Postgraduate Medical Education, University of Colorado Medical Center, 4200 E. 9th Ave., Denver 20, Colo.
- June 24-28 *The Psychosomatic Illness*—University of Colorado Medical Center, Denver, Colorado. Contact: E. C. Rosenow, Jr., M.D., American College of Physicians, 4200 Pine Street, Philadelphia, Pa.
- Aug. 5-9 *Clinical and Research Advances in Pediatrics and Child Guidance Problems*—Estes Park, Colorado. Contact: Office of Postgraduate Medical Education, University of Colorado School of Medicine, Denver 20, Colo.
- Oct. 14-18 *Recent Advances in the Diagnosis and Treatment of Diseases of the Heart and Lungs*—Washington, D. C. Contact: Murray Kornfeld, American College of Chest Physicians, 112 E. Chestnut St., Chicago 11, Ill.
- Oct. 21-25 *Clinical Cardiopulmonary Physiology*—Chicago. Contact: Murray Kornfeld, American College of Chest Physicians, 112 E. Chestnut St., Chicago 11, Ill.



DONALD A. ANDERSON, M.D.

Donald A. Anderson, 56, Salina, died on April 23, 1963, following a heart attack near Lake View, Arkansas, where he was fishing with friends.

Dr. Anderson was born in Salina on July 14, 1906, and practiced medicine there throughout his adult life except for four years spent in the Navy during World War II.

He was a graduate of Kansas Wesleyan University and received his degree in medicine from the University of Kansas School of Medicine in 1932. He was a member of the Methodist Church and Salina Elks Lodge.

Survivors are his wife, a daughter and a son.

TRACY R. CONKLIN, JR., M.D.

Tracy R. Conklin, Jr., died April 20, 1963, at Memorial Hospital in Abilene. He was sixty-four years old.

Born at Oakhill on September 26, 1898, he moved to Abilene with his parents when a child. Dr. Conklin was a graduate of the University of Kansas and Washington University School of Medicine, St. Louis, and began practicing medicine in Abilene in 1922.

He was a member of the American Riflemen's Association, American Legion, Elks Lodge and the KU and Washington University Alumni Associations.

Survivors include his wife, his mother and two brothers.

JOHN WILLIAM KELLY, M.D.

John W. Kelly, Louisburg, died at the Miami County Hospital in Paola on March 1, 1963, at the age of ninety-four. He practiced medicine in the Miami County area for over 60 years.

Dr. Kelly was born March 23, 1868, in London, England, and came to the United States in 1887. Prior to studying medicine, he was an ordained minister and held pastorates in Iowa and Missouri. He attended medical college at Keokuk, Iowa, and graduated from Central Medical College, St. Joseph, Missouri, in 1898. For a short time he practiced in Fontanelle, Iowa, moving to Louisburg with his family in 1899.

He was active in community affairs, a member of the Methodist Church, Masonic Lodge and the Order of the Eastern Star.

Survivors are his wife, three daughters and two sons.

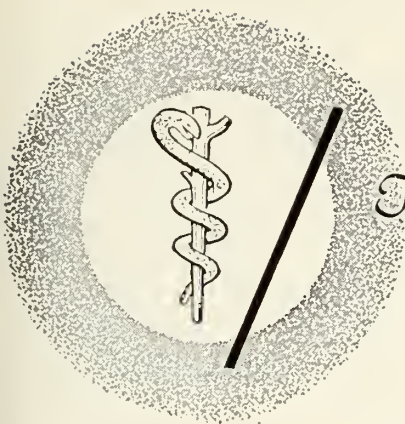
RALPH J. METCALF, M.D.

Ralph J. Metcalf, 59, El Dorado, died April 10, 1963, at Allen Memorial Hospital in El Dorado.

He was born July 19, 1903, at Spring Green, Wisconsin. He moved to El Dorado in 1929, after receiving his medical degree from Columbia University, New York City. He was also a graduate of the University of Wisconsin.

Dr. Metcalf served as a lieutenant commander in the Navy during World War II. He was a member of the El Dorado Board of Education, the American Legion, Masonic Lodge, Rotary and Elks Clubs, and served as a member of the Kansas State Board for the American Cancer Society.

He is survived by his wife, a daughter and a son.



The Kansas Press Looks at Medicine

Editor's Note. In this section the JOURNAL reproduces editorials relating to medicine which have appeared in the lay press. An effort is made to include both favorable and unfavorable comments, and the Editorial Board in no instance assumes responsibility for the opinions expressed.

WHY DOCTORS ARE "BAD" SAMARITANS

Did you know that America's doctors are increasingly becoming targets for unfounded malpractice suits and as a result many now flatly refuse to treat emergency cases.

Ruthless attorneys and unprincipled clients have helped create this unhappy state by making malpractice litigation a 50-million-dollar annual business. Of every seven doctors, one has been sued for malpractice.

Emergency treatment is made to order for such suits, asserts the *May Reader's Digest* in a report titled "Why Doctors Are 'Bad' Samaritans." Lacking a patient's medical history and away from proper equipment, doctors may be forced into decisions they would otherwise avoid. For example, a doctor might use morphine or an antibiotic on a patient who happens to be allergic to such medication. The doctor is then wide open to be sued for malpractice.

One doctor happened to stop at a highway accident. He set a young girl's broken arm, then instructed her mother to take her to the family physician for further treatment. The mother failed to do so, later sued the doctor when the arm failed to heal properly.

"This is not to imply," says the article, "that doctors do not make mistakes, become careless, negligent or inefficient. In such cases they should be held accountable for their acts—and generally are. But the burgeoning legalized blackmail of the phony malpractice suit can have serious repercussions for any of us who may be left writhing in agony in the mud when the passing physician's fear of bankruptcy overpowers his devotion to the Hippocratic Oath."

As a result, many states are considering revisions to their malpractice laws. A California girl broke her leg in a skiing accident and lay untreated despite the presence of several doctors on the same slope. As a direct result, the state of California passed in 1959

its now famous "Good Samaritan" law. Under its provisions doctors who "in good faith render emergency care at the scene of an emergency" are immune from liability in the case.

To my knowledge, Kansas has not adopted such a law. It seems an equitable way to assure that accident victims receive prompt emergency treatment without penalizing the Good Samaritans who render the treatment.—*Wellington Daily News*, April 23, 1963.

NEW MEMBERS

The JOURNAL takes this opportunity to welcome these new members into the Kansas Medical Society.

Howard R. Bradley, M.D.
8th & Mechanic
Emporia, Kansas

Edward G. Campbell, M.D.
1024 West 12th
Emporia, Kansas

Richard A. Carleton, M.D.
270 North Franklin
Colby, Kansas

Ronald Chen, M.D.
The Menninger Foundation
Topeka, Kansas

Richard O. Coe, Jr., M.D.
6100 Martway
Shawnee Mission, Kansas

Dale E. Darnell, M.D.
104 North Chestnut
Olathe, Kansas

Kendrick Davidson, M.D.
K.U. Medical Center
Kansas City 3, Kansas

Michael R. Deitz, M.D.
155 South 18th Street
Kansas City, Kansas

Ronald V. Erken, M.D.
3101 East 9th
Wichita, Kansas

Melvin V. Holman, M.D.
4815 West 103rd Street
Shawnee Mission, Kansas

Charles H. Johnson, M.D.
6014 Mission Road
Mission, Kansas

F. R. Kirchner, M.D.
K.U. Medical Center
Kansas City 3, Kansas

Ennio B. Magliocco, M.D.
The Menninger Foundation
Topeka, Kansas

Lauren R. Moriarty, M.D.
1239 West 61st Terrace
Kansas City 13, Missouri

Jerome S. Spitzer, M.D.
415 West 2nd
Hutchinson, Kansas

Elwyn J. Taylor, M.D.
Haven Clinic
Haven, Kansas

The Kansas Medical Society—1963-1964

OFFICERS

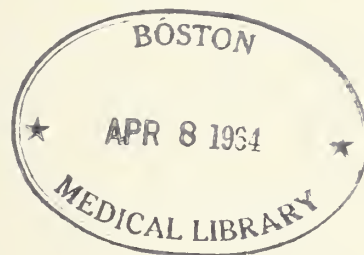
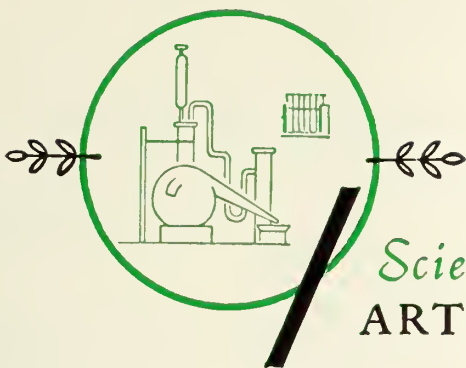
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A.M.A. Delegate.....	Lucien R. Pyle, Topeka
A.M.A. Alternate.....	William J. Reals, Wichita
A.M.A. Alternate.....	Glen R. Peters, Kansas City
Chairman of Editorial Board...	Orville R. Clark, Topeka

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Clay.....	G. B. McIlvain, Clay Center.....	Bruce McVay, Clay Center
Cloud.....	Charles Foster, Concordia.....	John Lathrop, Concordia
Cowley.....	W. G. Weston, Arkansas City.....	N. C. Smith, Arkansas City
Crawford.....	Jack D. Walker, Pittsburg.....	Raymond W. Lance, Arma
Dickinson.....	L. G. Heins, Abilene.....	J. W. Bell, Abilene
Douglas.....	George R. Learned, Lawrence.....	P. A. Godwin, Lawrence
Edwards.....	R. E. Schmoebelen, Kinsley.....	F. G. Meckfessel, Lewis
Finney.....	G. R. Hastings, Garden City.....	H. M. Wiley, Garden City
Flint Hills.....	D. L. Traylor, Emporia.....	J. P. Brockhouse, Emporia
Ford.....	R. G. Klein, Dodge City.....	C. C. Conard, Dodge City
Franklin.....	Louis N. Speer, Ottawa.....	R. S. Roberts, Ottawa
Geary.....	H. E. O'Donnell, Junction City.....	R. M. Carr, Junction City
Greenwood.....	John H. Basham, Eureka.....	J. Gordan Claypool, Howard
Harvey.....	D. V. Preheim, Newton.....	T. A. Turner, Halstead
Iroquois.....	Richard Hill, Meade.....	Carl Olson, Fowler
Jackson.....	E. C. Moser, Holton.....	M. Ross Moser, Holton
Jefferson.....	W. A. R. Madison, Nortonville.....	A. T. Stewart, Jr., Valley Falls
Johnson.....	Frederic Speer, Mission.....	Claire L. Tambyln, Shawnee Mission
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Miami.....	M. L. Masterson, Paola.....	R. C. Stanley, Paola
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Montgomery.....	M. K. Borklund, Independence.....	Donald D. Arthurs, Cherryvale
Neosho.....	James D. Gough, Chanute.....	G. L. Ashley, Chanute
Northeast Kansas.....	C. C. Hunnicutt, Sabetha.....	H. L. Lawless, Blue Rapids
Northwest Kansas.....	W. G. Parker, Hoxie.....	J. H. Coffman, Oberlin
Osborne.....	J. F. Cornely, Osborne.....	J. E. Henshall, Osborne
Pawnee.....	William R. Brenner, Larned.....	S. T. Coughlin, Larned
Pottawatomie.....	Eugene A. Walsh, Onaga.....	Fred E. Brown, St. Marys
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Shawnee.....	R. H. Greer, Topeka.....	H. T. Greene, Topeka
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Stafford.....	O. W. Longwood, Stafford.....	C. Everett Brown, Stafford
Washington.....	D. A. Bitzer, Washington.....	L. L. Huntley, Washington
Wilson.....	Lynn E. Beal, Fredonia.....	C. E. Stevenson, Neodesha
Woodson.....	A. C. Dingus, Yates Center.....	H. A. West, Yates Center
Wyandotte.....	James G. Lee, Kansas City.....	W. P. Williamson, Kansas City



Food Poisoning

*Public Health Implications of an Outbreak of Salmonella typhimurium Gastroenteritis in Wichita**

EUGENE SANDERS, M.D., and DONN D'ALESSIO, M.D., *Atlanta*;**

M. LEON BAUMAN, M.D., ROSEMARY B. HARVEY, M.D.,

JAMES F. AIKEN, JR., WILLIAM D. CROSS, LUCILE COOK,

and B. H. LLOYD, *Wichita*†

Description of the Outbreak

SATURDAY EVENING, September 8, 1962, approximately 1,300 adult guests from widely scattered areas of Kansas gathered at a Wichita ballroom to support a prominent political candidate. They were served a buffet-style dinner from 6:30 to 9:30 p.m. The following morning, more than 300 who attended the banquet appeared at physicians' offices throughout the state with febrile gastroenteritis. Simultaneously, officials of the state and local health departments received numerous telephoned reports and inquiries concerning the outbreak from patients, physicians, and local news media. It was apparent that illness affected

Early in September, 1962, more than 300 adults developed gastroenteritis following a political rally and banquet in Wichita. *Salmonella typhimurium* was identified as the infecting agent, and sliced turkey served at the banquet was implicated as the common source vehicle of infection. The salient features of the outbreak and its investigation comprise this report.

* From the Communicable Disease Center, Public Health Service, U. S. Department of Health Education and Welfare, Atlanta 22, Georgia, and Kansas City, Kansas, and the Wichita-Sedgwick County Department of Public Health, Wichita, Kansas.

** Epidemic Intelligence Service Officers, PHS, USDHEW, Atlanta 22, Georgia, and Kansas City, Kansas.

† Dr. Bauman, Director; Dr. Harvey, Director Preventative Medicine; Mr. Aiken, Director Environmental Health; Mr. Cross, Chief Environmental Health Services; Mrs. Cook, Chief Personal Health Services; Mr. Lloyd, Chief Laboratory Services, Wichita-Sedgwick County Department of Public Health, Wichita.

only those who had eaten at the political banquet. They had developed symptoms of diarrhea, nausea, vomiting, fever, chills, and headache, in most instances, 6 to 18 hours after the meal. The menu was reported to have consisted of ham, sliced turkey, dressing, gravy, canned potatoes, green beans, salad, rolls, peach shortcake, coffee and water. By pooling information from the various sources, the Wichita-Sedgwick County Health Department medical staff estimated that several hundred guests had become

ill. Monday morning, September 10, they confirmed the information obtained the previous day and planned an investigation of the outbreak.

The Investigation

The investigation was designed to permit confirmation of the tentative diagnosis of salmonellosis, to define the extent of the outbreak in Sedgwick County, and to determine, if possible, the specific source of infection. Patients were encouraged by local news media to be interviewed and submit fecal specimens for culture. The medical and nursing staff of the health department conducted the interviews. They obtained name, age, sex, date of onset and duration of symptoms, and a food history from each patient. The nursing staff obtained similar data and fecal specimens from each person involved in preparing and serving the banquet. The medical and environmental sanitation staff interviewed the caterers to determine details of food preparation and storage. The serving facilities of the ballroom and cooking areas were examined and samples taken for culture when indicated.

During the ensuing two weeks, approximately 200 banquet guests from Sedgwick County were interviewed. Illness appeared to be most commonly associated with their having eaten sliced turkey at the banquet. In addition, the diagnosis of salmonellosis was confirmed by recovery of *Salmonella typhimurium* from the stools of over 50 per cent of patients in Sedgwick County. Since the infecting agent had been identified and linked to a common food source, an effort was made to expand the investigation. The State health department agreed to assist, and physicians from the U. S. Public Health Service who had expressed an interest were invited to participate in further study.

Attempts at locating additional guests were hampered by the lack of a record of those attending the banquet. However, a list of some 3,000 people to whom tickets were sent was made available to the authors on September 30. This list was then used to distribute a letter and questionnaire form in an attempt to obtain further clinical and epidemiological data. Questions included were identical to those asked during patient interviews at the local health department. In addition, all persons involved were requested to submit stool specimens to their nearest county health department. Data obtained from patient interviews and completed questionnaires was matched with stool cultures and evaluated clinically and epidemiologically.

Results

Clinical. A total of 498 histories were obtained from approximately 1,300 guests who attended the

banquet. The total includes histories obtained by personal interview and questionnaires completed between September 30 and October 21. Analysis of results is based upon this total which may introduce several sources of bias: (1) those who developed symptoms may have responded more readily to the questionnaires, (2) extent of detail given on questionnaires varied widely, and (3) a fraction of the questionnaires were completed six weeks after the banquet when memory of details may have been faulty. However, sufficient data was obtained to permit meaningful analysis.

Among the 498 who responded, 296 had developed gastrointestinal symptoms. Most common complaints in order of frequency were as follows: diarrhea, stomach cramps, fever, nausea, headache, general aching, chills, vomiting, and prostration (*Table I*). Frontal and occipital headache was often a most prominent symptom among those experiencing it.

TABLE I
SYMPTOMS EXPERIENCED BY 296 BANQUET
GUESTS WHO REPORTED ILLNESS

Symptom	No. of Patients	Per Cent of Total
Diarrhea	260	87.8
Abdominal Cramps	122	41.2
Fever	116	39.2
Nausea	105	35.5
Headache	68	23.0
General Aching	56	18.9
Chills	55	18.6
Vomiting	42	14.2
Prostration	35	11.8

As recorded in questionnaires, onset of illness varied from nine hours to 12 days after the suspect meal (*Figures 1 and 2*). The median time before onset was 52 hours; the mode 12 to 17 hours. A portion of the cases with an apparently prolonged incubation period may reflect bias inherent in the sample or represent secondary cases. However, several of these cases, upon follow-up interview, appear to be *bona fide* examples of an incubation period of one week or more associated with primary illness. Duration of symptoms varied from less than one hour to three weeks. The median duration of individual symptoms varied from 24 to 72 hours (*Table II*).

Of 296 who reported symptoms, 210 were sufficiently ill to consult a physician. The total number hospitalized is indeterminant, but probably exceeded twelve. There were no known fatalities.

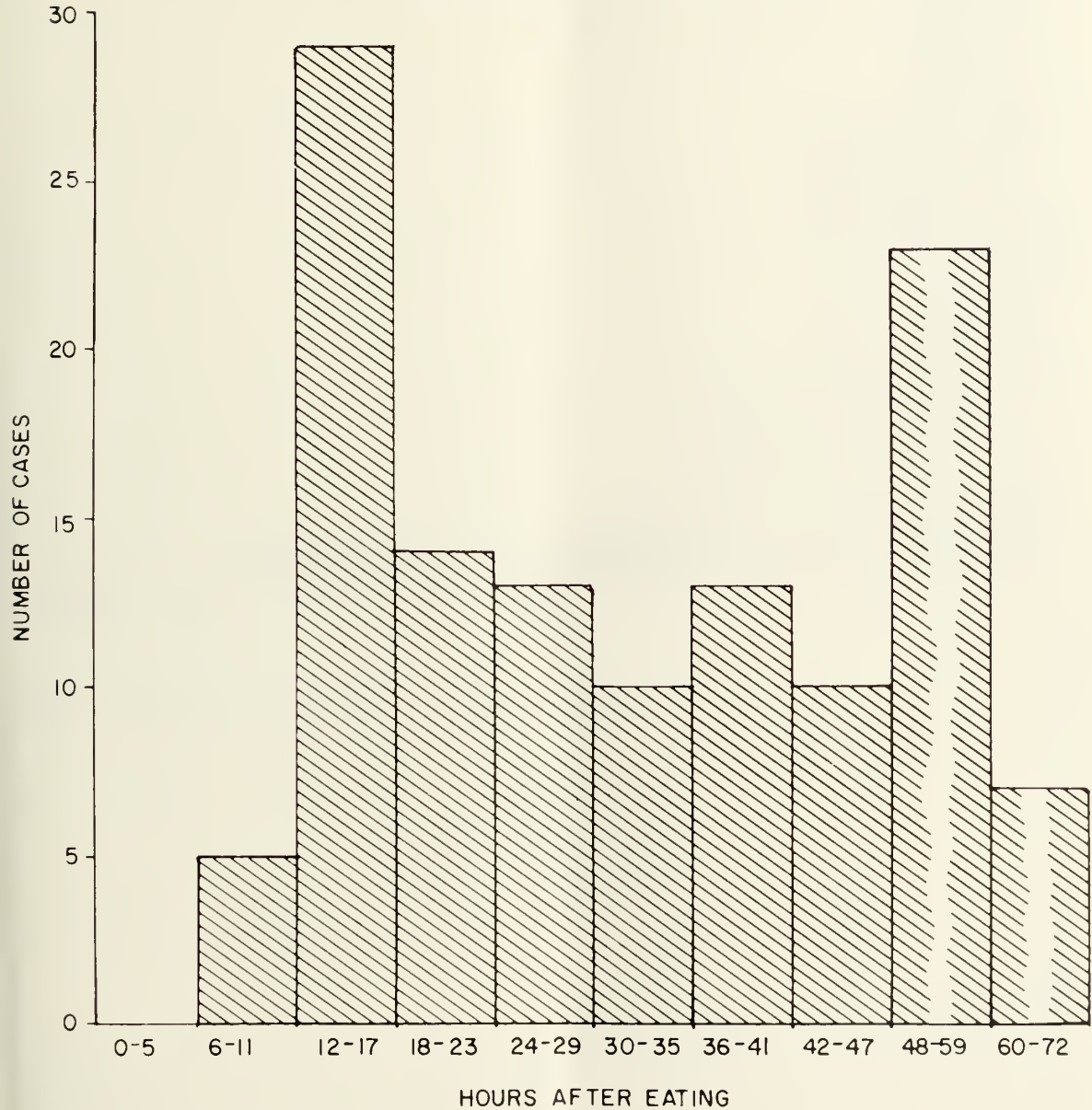
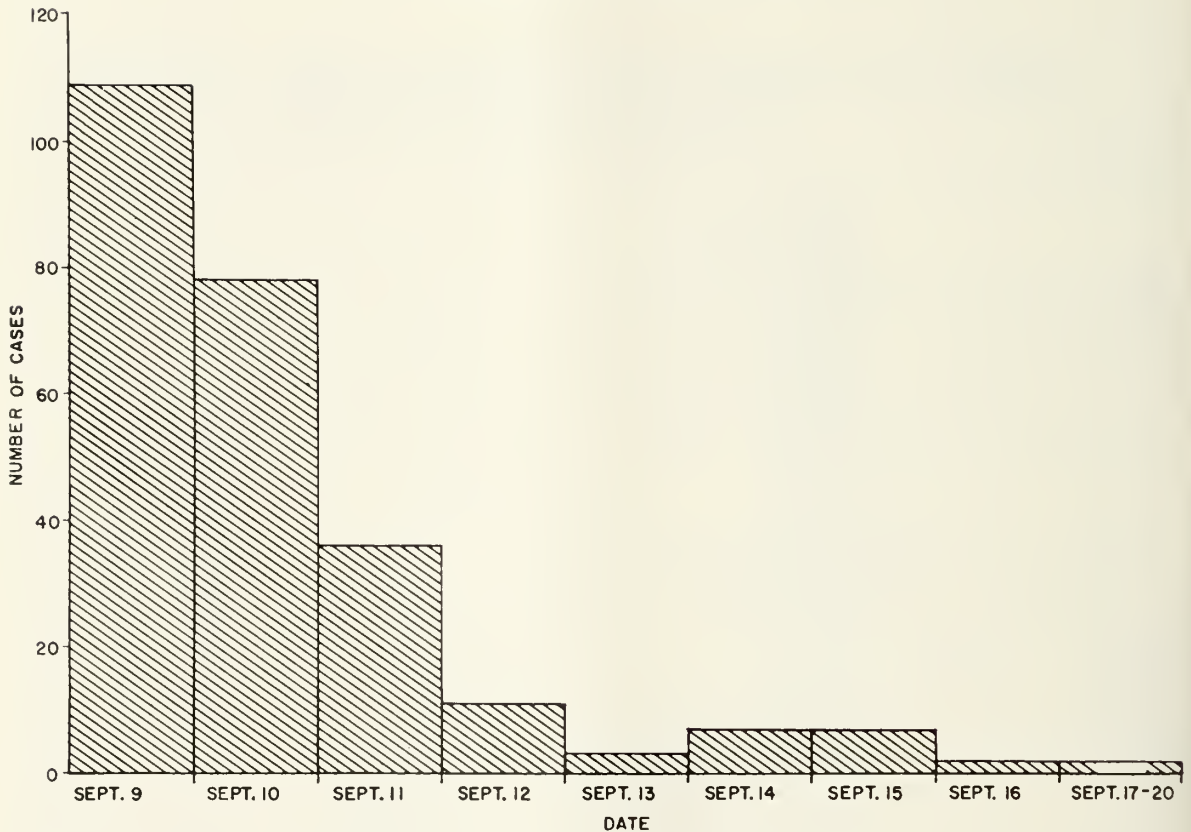
Figure 1**ONSET OF ILLNESS BY HOUR FOR THE FIRST 72 HOURS
AFTER EATING SUSPECT MEAL**

Figure 2.
ONSET OF ILLNESS BY DAY FOR THE FIRST 12 DAYS
AFTER EATING SUSPECT MEAL



Results of Cultures. Stool cultures were obtained from 225 symptomatic cases. Of these, 128 (56.9 per cent) yielded *Salmonella typhimurium* (Table III). Sixty-seven asymptomatic individuals who participated in the banquet submitted stool specimens. Seventeen (25.4 per cent) of these yielded *S. typhimurium*.

Results of Food Histories. An analysis of 498 food histories was performed. Those who reported symptoms of salmonellosis (296) and those asymptomatic individuals from whom *S. typhimurium* was isolated (17) were considered "cases" for purposes of the analysis. The data strongly implicated turkey as the common source vehicle (Table IV). The case rate for all those responding to the questionnaire was 62.9 per cent. Case rates of 71.7 per cent were found for those who ate turkey and 20.0 per cent for those who did not eat turkey. A similarly high case rate was noted for those eating dressing; however, a "negative" case rate of 50.0 per cent tends to make dressing a less likely vehicle.

Possible Sources of the Organism. The catering of the banquet was performed by a family of licensed

food-handlers, who had not previously undertaken preparation of a banquet of such size. The ham served was commercially "tinned," and was heated prior to serving. Turkeys, obtained frozen, were thawed overnight on September 6, and were cooked during the day, September 7. Perhaps three additional

TABLE II
RANGE AND MEDIAN DURATION OF
SYMPTOMS REPORTED BY THOSE PATIENTS
PROVIDING DATA

Symptom	No. of Patients	Range	Median
Diarrhea	103	½ hr. —14 days	72 hrs.
Abdominal Cramps	44	2 hrs.—10 days	72 hrs.
Fever	41	5 hrs.—10 days	48 hrs.
Nausea	32	1 hr. —14 days	48 hrs.
Headache	24	3 hrs.—10 days	48 hrs.
General Aching ...	32	10 hrs.—12 days	48 hrs.
Chills	30	½ hr. —10 days	24 hrs.
Prostration	32	½ hr. —21 days	48 hrs.

TABLE III
RESULTS OF BACTERIOLOGICAL
EXAMINATION OF STOOL SPECIMENS OF
292 BANQUET GUESTS

	<i>Number Cultured</i>	<i>S. typhimurium Isolated</i>	<i>Per Cent Isolation</i>
Symptomatic	225	128	56.9
Asymptomatic	67	17	25.4

turkeys were obtained on September 7, and were cooked at the caterer's home that night. It is uncertain exactly how many turkeys were obtained or how they were handled subsequent to cooking, because conflicting details were given by those involved in the preparation, storage, and transport of the turkeys. However, the facilities for cooking and refrigeration were determined to be inadequate in size and ability to maintain a desired temperature. Though the caterers insist that the turkeys were cooked throughout, a hired cook and many who attended the banquet reported that some turkey slices reached the steam table inadequately cooked. The canned vegetables were heated shortly before serving. The dessert was prepared with cake from a local bakery, canned peaches, and a commercial dried whip preparation, reconstituted with milk from a local dairy. The gravy and dressing were reportedly cooked the morning of the banquet, though the broth ingredients were obtained from the turkeys cooked the previous day.

The meal was served buffet style. Many guests departed before eating because progress through the serving line was slow. Several noted that the dressing

and gravy were cold when served. In addition, the number of guests far exceeded that estimated, and there were no facilities at the ballroom for dishwashing. The caterers denied that any dishes or utensils were reused, though a hired cook reports having had to wash dishes in cold water and use them a second time during the evening.

Environmental investigation revealed that the cooking area was clean, though the serving table had been improperly cleansed after the banquet. A surface swab culture taken from the serving table nine days after the banquet grew *Salmonella typhimurium*. The remainder of the catering equipment was similarly cultured, but no enteric pathogens were isolated. None of the food was available for culture.

Eighteen persons intimately involved in the preparation and serving of the dinner were contacted. Only one reported illness after eating the suspect meal. None gave a history of gastroenteritis in the months preceding the banquet. *Salmonella typhimurium* was isolated from only one food-handler, the co-owner of the catering firm who personally cooked all of the turkeys served. She denies illness before or after the banquet, though she sampled cooked meat from many of the turkeys after slicing.

Concurrent with the above investigations, surveys were conducted at a local turkey farm and a turkey processing plant, each of which were known to have supplied the caterers. Forty cloacal swab cultures and 60 environmental cultures were obtained from each. No isolations of *S. typhimurium* have been made from either source or from a single frozen turkey known to have originated from the same lot as those served.

TABLE IV
CALCULATION OF CASE RATES BY SPECIFIC FOOD ITEMS
SERVED AT THE BANQUET

	<i>Ate Suspect Item</i>			<i>Case Rate PER CENT</i>	<i>Did Not Eat Suspect Item</i>			<i>Case Rate PER CENT</i>
	<i>Ill</i>	<i>Not Ill</i>	<i>Total</i>		<i>Ill</i>	<i>Not Ill</i>	<i>Total</i>	
Turkey	296	117	413	71.7	17	68	85	20.0
Dressing	206	78	284	72.5	107	107	214	50.0
Gravy	111	70	181	61.3	202	115	317	63.7
Ham	185	147	332	55.7	128	38	166	77.1
Green Beans	241	153	394	61.2	72	32	104	69.2
Boiled Potatoes	222	129	351	63.2	91	56	147	61.9
Lettuce Salad	214	152	366	58.5	99	33	132	75.0
Shortcake	245	154	399	61.4	68	31	99	68.7

Discussion and Conclusions

Four hundred ninety-eight of approximately 1,300 banquet guests were contacted during this investigation. Of these, 313 either reported symptoms consistent with salmonellosis or were found to harbor *S. typhimurium* on fecal culture. This represents the largest reported common source outbreak of *S. typhimurium* gastroenteritis in Kansas¹ and, perhaps, in the United States. A similar outbreak, traceable to contaminated cheese, involved 250 residents of three Tennessee counties in 1945.² The largest common source outbreak on record occurred in Sweden in 1953, when nearly 9,000 bacteriologically proved cases of *S. typhimurium* gastroenteritis resulted from ingestion of contaminated fresh beef and pork.³ The actual number of individuals infected at the Wichita banquet remains indeterminant because of lack of information concerning the remaining 800 who attended.

Symptoms of nausea, diarrhea, vomiting, abdominal cramps, and fever experienced by patients in this study are typical of most salmonella gastrointestinal infections. The occurrence of severe headache in nearly one-quarter of symptomatic patients is noteworthy. Saphra and Winter previously failed to record this association in analysis of data concerning over 7,000 human salmonella infections submitted to them in New York City from 1939 to 1955.⁴ However, this difference may merely be a reflection of discrepancies in the number of patients personally questioned concerning associated symptoms in each of the studies.

Ranges of incubation period and duration of symptoms determined from patients' histories are consistent with those noted in similar outbreaks.⁴ No fatalities were reported, which is indeed fortunate, as a recently published series has indicated a fatality rate due to *S. typhimurium* infection of 4.1 per cent.⁴

S. typhimurium was recovered from the stools of 56.9 per cent of cultured symptomatic cases, and 25.4 per cent of guests without symptoms who were cultured. The occurrence of occult infection in a significant fraction of individuals following salmonella outbreaks presents a challenging public health problem. Such unsuspecting individuals may easily transmit the organism for variable periods of time, unless discovered and instructed in maintenance of more rigorous personal hygiene until they are free of infection.

An analysis of 498 food histories strongly implicated sliced turkey as the common source vehicle. The precise method of introduction of the organism into the turkey could not be determined. Two possibilities appeared likely: (1) an infected flock of

turkeys, or (2) an asymptomatic carrier involved in preparation of the turkeys. Transmission of *S. typhimurium* to man from sliced turkey has been described previously.⁵ The literature is also replete with reports of isolations of various salmonella serotypes from turkeys.⁶ However, difficulty in determining the precise source of introduction of the organism into various foodstuffs following an outbreak is not unusual because of the wide variety of potential sources of salmonella that may have contaminated food during processing.

This outbreak highlights many problems to be confronted in the study and eventual control of salmonellosis. An epidemic of gastroenteritis may cause economic and social repercussions due to incapacitation of large numbers of individuals simultaneously. Secondary family outbreaks are common; at least four are known to have occurred as a result of this outbreak. The hazard of unidentified acute carriers has been alluded to above. An additional small percentage of patients may be expected to become chronic carriers. These must be located, restricted from food handling occupations, and therapy should be attempted. Animal hosts must be identified. They must be freed of the organisms if they are potential sources of human infection. Food for human and animal consumption likely to contain salmonellae must be prepared in a manner that will achieve effective sterilization. Appropriate cleaning of equipment and utensils must be encouraged to prevent subsequent reintroduction of the organism into the final product. It is thus apparent that any successful program of control rests clearly with public health officials working jointly with practicing physicians.

Summary

An outbreak of *Salmonella typhimurium* gastroenteritis occurred following a political banquet in Wichita, Kansas, September 8, 1962. Four hundred ninety-eight of approximately 1,300 who attended gave clinical and epidemiologic histories. Illness was similar to salmonella gastroenteritis observed in similar outbreaks, except for the striking frequency and severity of associated headache. The organism was isolated from 128 symptomatic individuals and from 17 who denied illness. Evaluation of food histories obtained from the banquet guests implicated sliced turkey as the common source vehicle. Results of a search for the source of introduction of the organism into the turkey were inconclusive. The outbreak illustrates many challenging problems to be met in the future study and eventual control of salmonellosis.

(Continued on page 302)

Steroid Relationships Confirmed

On the Steroid Content of Amniotic Fluid

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WM. SPANOS, M.D.; and C. A. HUNTER, M.D., *Kansas City, Kansas**

HOET AND OSINSKI reported that amniotic fluid from a diabetic patient contained cortisol and cortisone, whereas none was detected in amniotic fluid from normal patients. Stimulated by these observations, we began an investigation of the steroid content of various types of amniotic fluid. It was felt that verification of this lead might provide some clue to the etiology of the fetal mortality and hydramnios in diabetes, and perhaps provide some rationale for the origin of other diseases of pregnancy. While this work was in progress a manuscript by Bush and Baird appeared, indicating that amniotic fluid from both normal and diabetic patients contained small but definite amounts of cortisol and cortisone in approximately the same concentration in both types of fluid. Migeon *et al.*^{3, 4} could not detect corticosteroids in several specimens of amniotic fluid from term patients. Our work is in general agreement with the observations of both groups. Amniotic fluid from patients in various diseased states either contained cortisol and cortisone in concentrations equal to that in normal fluid, or none was found.

Material and Methods

Amniotic Fluid

Amniotic fluid was obtained by aspiration via transabdominal puncture several days before delivery. No fluid possessing a definite pinkish tinge (blood) was accepted for examination. Samples after aspiration were immediately frozen in the presence of a few ml. of toluene.

Solvents

Solvents were A.R. grade distilled in all-glass apparatus before use. Distillation of tissue extracts were performed *in vacuo*.

* From the Department of Obstetrics and Gynecology, University of Kansas Medical Center. This study was supported by a grant from the National Institute of Health (A-3488).

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Fractionation of Amniotic Fluid

On thawing, each amniotic fluid sample was extracted three times with 3 volumes of ethyl acetate, followed by three additional extractions with chloroform. Emulsification was a frequent problem with the

Cortisol and cortisone were estimated in six samples of amniotic fluid from normal mothers at term, from four diabetic and two prediabetic mothers, and from four mothers with varying degrees of toxemia or polyhydramnios. All amniotic fluids were obtained by transabdominal puncture. Neither of the steroids could be detected in most specimens, despite examination of large quantities (e.g. 1 liter) of fluid.

When detected, there was no significant difference in steroid concentration between fluid from normal and diseased patients. In those fluids where cortisol and cortisone were indicated, evidence for free and conjugated steroids was obtained. Common to all fluids was (1) an unidentified substance having the approximate mobility on paper of cortisol, (2) free and esterified cholesterol, and (3) fatty acids of unidentified constitution.

ethyl acetate, but by allowing the mixtures to stand in the ice box overnight good phase separation was accomplished. The organic extracts were combined and distilled to dryness. The residue was distributed between 100 ml. of 80 per cent aqueous methanol and 100 ml. of petroleum ether (b.p. 30-60°); the latter solution was examined as described below. The methanol phase was distilled to about 10 ml. volume, then extracted three times with an equal volume of chloroform. The combined chloroform extracts were shaken two times with 1N NaOH, washed with wa-

ter and distilled to dryness. The residue was examined for "free" corticosteroids.

The aqueous phase (after the initial extraction with ethyl acetate and chloroform) was adjusted to pH 6 and buffered with acetate buffer. Twenty-five units of glucuronidase* per ml. of fluid and 1 ml. of chloroform per 100 ml. of fluid were added. The mixture was then incubated for 24 hours at 37°, extracted with ethyl acetate and chloroform, and the extracts otherwise treated exactly as the corresponding organic extracts of the original amniotic fluid. The residue from the alkali-extracted chloroform solution was examined for "conjugated" corticosteroids.

Petroleum Ether-Soluble Material

Petroleum ether extracts obtained from the above fractionations were washed with water and distilled to dryness. The waxy residue was dissolved in acetone: ethanol (1:1), excess digitonin was added** and a digitonide obtained according to the method of Sperry and Webb. From this digitonide free sterol was obtained by the pyridine method.⁶ The supernatants from the digitonin precipitations were distilled to dryness. The residue was triturated twice with a small volume of warm ethyl ether. The combined ether solutions were centrifuged and the clear centrifugate evaporated to dryness. The residue was heated on the steam bath for several hours with 10 ml. of 5 per cent alcoholic KOH and a non-saponifiable fraction was obtained from the cooled mixture by extraction with petroleum ether. A digitonide was obtained from this fraction and free sterol subsequently obtained from this as previously described. A combined sample of free sterol from several normal fluids was crystallized to constant melting point from acetone and acetone-methanol mixtures, giving needles, m.p. 147-148°; ² [α]_D^{22°} -34.32°. (CHCl₃). An acetate was prepared from acetic anhydride and pyridine (reflux) in the usual manner, giving needles, m.p. 114-115°. The free sterol gave no melting point depression on admixture with authentic cholesterol and the infrared spectrum was identical with that of cholesterol. A combined specimen of free sterol from several diseased patients gave cholesterol with the same constants. A sample (50 mg.) of crude free sterol was subjected to chromatography on silica gel. There was no indication of any gross amount of

other sterol present.* In all fluids examined the total cholesterol concentration was approximately the same, about 4 mg. per 100 ml. of amniotic fluid.

The alkaline phase obtained from saponification of the petroleum ether extracts, on acidification and extraction yielded small amounts of waxy material. No attempt was made to identify this acidic material, which had all the gross characteristics of fatty acids from various animal tissues.

Examination of Corticosteroid Fractions: Chromatography

The residue obtained from distillation of the chloroform extracts (above) were diluted to a fixed volume in ethanol. Aliquots of this solution were spotted on 17 x 50 cm. strips of Whatman No. 1 paper, with evaporation of the ethanol facilitated by a stream of warm air. Increasing volumes of aliquots were used, when preliminary examination indicated no cortisol or cortisone was present. When neither steroid was indicated by application of as much as 1 ml. of aliquot, the entire remaining unknown solution was distributed along the starting line for about 10 cm. After an appropriate equilibration period, either the B₅ system of Eberlein & Bongiovanni (benzene, methanol, water: 500:250:250) or Moolenaar (toluene, n-octanol, methanol, water: 98:2:50:50) was used for development. Although the spots of cortisol and cortisone were usually blurred at this stage because of accompanying impurities, if present in at least 0.5 μ g quantity they were readily visualized under ultraviolet light. An area about 0.5 cm. larger than indicated under u.v. light was cut out and leached three times with 5-10 ml. of warm methanol. The combined methanol extracts were evaporated to dryness under N₂ and the residue placed quantitatively on Whatman No. 1 paper, again in as small a spot as possible. Development was then performed in either of the two solvent systems previously indicated.

Every sample investigated exhibited a spot moving about 4-6 cm. ahead of cortisol, and readily visualized under ultra-violet light. However, it gave no color with either blue or red tetrazolium. It could not be traced to an artifact arising from the solvents nor to contaminating estrogenic material. No further examination was made.

Identification of Cortisol and Cortisone

In addition to the unknown, each paper to be chromatographed contained, 8 and 16 cm. respectively from the unknown, control spots of 0.5-5.0 μ g of cortisol and cortisone or a mixture of both. Preliminary identification of the unknown was made by

* Bacterial glucuronidase, Type 1 from the Sigma Chemical Company, St. Louis, Missouri.

** After standing overnight the mixtures were centrifuged. Additional digitonin was added to the supernatants. The absence of any further precipitation after standing several hours was used as a criterion for excess digitonin having been added originally.

* The possible presence of trace amounts of dihydrocholesterol or other steroids was not excluded.

comparison with the position of the control spots. After elution from the second chromatograph, and where sufficient unknown was available, a mixed chromatogram was next performed (e.g., the unknown with 1 μg of corticosteroid spotted on top). In no case did the unknown (estimated as either cortisol or cortisone) separate from the control spot in either of the solvent systems used. In several cases acetylation of the unknown was performed according to the method described by Baird and Bush.² Again, neither cortisol nor cortisone in the unknown separated from authentic acetylated steroids chromatographed on Whatman No. 2 paper in the solvent system petroleum ether-toluene-methanol-water (67:33:85:15).² Final visualization of the unknown and controls was made by spraying the papers with triphenyltetrazolium chloride.⁹ Quantitative estimation of the amount of cortisol or cortisone was made by comparing visually the area and intensity of the spots so-treated with known amounts of authentic steroid similarly treated. This method had an error of ± 15 per cent in the range 0.2-5.0 μg .

Discussion

The results presented in this manuscript substan-

tiate somewhat divergent observations from two other laboratories, one of which reported that cortisol and cortisone are found in normal amniotic fluid,² the other reporting that neither steroid was found in a small number of specimens examined.^{3, 4} The most conclusive answer at the moment appears to be that, whatever the source of the steroids in the amniotic fluid,* the amounts are variable and may for all practical purposes be negligible in normal and several diseased states. Regarding the possible source of the steroids, in one sample of amniotic fluid contaminated with meconium, (not reported here) the corticosteroid content appeared slightly higher than expected. Further examination of several meconium samples, however, did not indicate the presence of cortisol or cortisone (in this fetal product).**

Cope *et al.* reported the presence of cortisol in amniotic fluid from several patients exhibiting toxemia and hypertension. These data and those reported in the present manuscript (Table 1) are in

* The source of amniotic fluid is still in question.¹¹

** Unpublished observations. Kinsella *et al.*¹² likewise found no evidence of significant amounts of α -ketolic steroids in meconium.

TABLE 1
CORTISOL AND CORTISONE CONTENT OF VARIOUS TYPES OF
AMNIOTIC FLUID*

Type of Fluid	Volume, ml.	Cortisol, $\mu\text{g}/100$ ml.		Cortisone, $\mu\text{g}/100$ ml.	
		FREE	CONJUGATED	FREE	CONJUGATED
Normal	275	1.0	1.0	0.5	0.5
Normal	360	2.0	2.0	2.0	2.0
Normal	600	0	0	0	0
Normal	857	0	0	0	0
Normal (Twins)	3800	1.0	1.0	1.0	1.0
Normal	400	0	0	0	0
Prediabetic	475	0	0	0	0
Prediabetic	540	0	0	0	0
Mild diabetic**	500	0	0	0	0
Diabetic	155	1.0	1.0	1.0	1.0
Diabetic	3400	0	0	0	0
Diabetic†	1000	0	0	0	0
Mild pre-eclampsia with polyhydramnios	1200	0	0	0	0
Premature separation of placenta††	700	0.5	0.5	0.5	0.5
Toxemic	300	1.0	1.0	1.0	1.0
Toxemic	325	0	0	0	0

* Where no corticosteroids (cortisol or cortisone) were detected, the values are given as zero. Considering the losses which incur in extractions, manipulations, etc., one cannot exclude the possibility of undetectable amounts present. However, it was felt that any corticosteroids present in these samples must be in a concentration considerably lower than the minimum amount reported by other investigators.^{1, 2, 11}

** Accompanied by essential hypertension. Diabetes controlled by diet.

† No more diabetic fluids from diabetic mothers were examined, following the report by Baird and Bush.²

†† Anencephaly and polyhydramnios. Premature infant stillborn.

agreement that in these clinical states the corticosteroid level in amniotic fluid is not above normal.

Where found, cortisol and cortisone were present in both free form and in a form liberated by glucuronidase.[†] The total quantity of corticosteroids reported in this manuscript, where found, is, therefore, higher than that reported by other investigators.^{2, 11} Since an appreciable quantity of estrogen is conjugated as glucuronide in amniotic fluid¹³ it does not seem surprising that the corticoids should be found partially in this form also.

In addition to cortisol, cortisone,^{1, 2, 11} estrone and estriol^{13, 14} the following steroids have been reported present in amniotic fluid: ketosteroids,¹⁴ progesterone¹⁵ and possibly pregnandiol.¹⁴ To this list both free and esterified cholesterol should now be added.^{††} Since this sterol is a normal constituent of almost all animal tissues its presence in amniotic fluid is not unexpected. All amniotic fluids examined in our laboratory also contained an unidentified fatty acid mixture and a substance, possibly a corticosteroid, which had the approximate polarity of cortisol but did not stain with tetrazolium. Controls indicated it was neither an artifact from the solvents nor estrogenic material which may have remained in the corticosteroid fraction as a contaminant. Since it was present in fluid from normal and diseased patients it was not further examined.

References

1. Hoet, J. P., and Osinski, P. A.: *Experientia*, 10:467, 1954.
2. Baird, C. W., and Bush, I. E.: *Acta Endocrinologica*, 34:97, 1960.
3. Migeon, C. J., Bertrand, J., and Wall, P. E.: *J. Clin. Invest.*, 36:1350, 1957.
4. Migeon, C. J., Bertrand, J., Wall, P., Stempf, R. S., and Prystowsky, H.: *Ciba Colloq. on Endocrinology*, 11:338, 1957.
5. Sperry, W. M., and Webb, M.: *J. Biol. Chem.*, 187:97, 1950.
6. Frame, E.: *Endocrinology*, 34:175, 1944.
7. Eberlein, W. R., and Bongiovanni, A. M.: *Arch. Biochem. Biophys.*, 59:90, 1956.
8. Moolenaar, A. J.: *Acta Endocrinologica*, 25:161, 1957.
9. Nowaczynski, W., Goldner, M., and Genest, J.: *J. Lab. Clin. Med.*, 45:818, 1955.
10. Bush, I. E., and Mahesh, V. B.: *Biochem. J.*, 71:705, 1959.
11. Cope, C. L., Hurlock, B., and Sewell, C.: *Clin. Sci.*, 14:25, 1955.
12. Kinsella, R. A., Jr., and Francis, F. E.: *J. Clin. Invest.*, 34:945, 1955.

[†] Presumably, therefore, present as the glucuronide. Since the original fluids were vigorously extracted with large amounts of two different solvents, there seems little doubt that the steroids obtained on the (second) extraction following incubation with the enzyme preparation was present as conjugated steroid.

^{††} Added in press: Lambert and Pennington have recently reported the presence of 6 β -hydroxycortisol in amniotic fluid (*Nature*, 197:391 [1963]).

13. Diczfalusy, E., and Magnusson, A. M.: *Acta Endocrinologica*, 28:169, 1958.

14. Abdine, F. H., Ghalioungi, P., and El Ridi, M. S.: *Z. Physiol. Chem.*, 296:44, 1954.

15. Melampy, R. M., Hern, W. R., and Rakes, J. M.: *J. Animal Sci.*, 18:307, 1959.

Food Poisoning

(Continued from page 298)

Credits

The authors are indebted to the personnel of the Wichita-Sedgwick County Department of Public Health, Dr. Donald Wilcox, State Epidemiologist, and Dr. Charles Hunter, Director State Laboratories, Kansas State Board of Health, and Dr. Philip Brachman, Chief, Investigations Section, Communicable Disease Center, for kind assistance.

References

1. Hunter, C.: Personal Communication.
2. Tucker, C. B., Cameron, G. M., Henderson, M. P., and Beyer, M. R.: Salmonella Typhimurium Food Infection from Colby Cheese. *J.A.M.A.* 131:119-120 (Aug.), 1946.
3. Lunkbeck, H., Plazikowski, U., and Silvestolpe, L.: The Swedish Salmonella Outbreak of 1953. *J. Appl. Bact.*, 18:535-548 (Dec.), 1955.
4. Saphra, I., and Winter, J. W.: Clinical Manifestations of Salmonellosis in Man: An Evaluation of 7779 Human Infections Identified at the New York Salmonella Center, *New Eng. J. Med.*, 256:1128-1134 (June), 1957.
5. Mackel, D. C., Payne, F. J., and Pirkle, C. I.: Outbreak of Gastroenteritis Caused by *S. typhimurium* Acquired from Turkeys. *Pub. Health Rep.* 74:746-748 (Aug.), 1959.
6. Galton, M. M., Mackel, D. C., Lewis, A. L., Haire, W. C., and Hardy, A. V.: Salmonellosis in Poultry and Poultry Processing Plants in Florida. *Am. J. Vet. Research* 16:132-137 (Jan.), 1955.

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Medullary Sponge Kidney

An Uncommon Urological Disorder, Probably Congenital in Origin, and Curable

T. A. TURNER, M.D.; J. I. WALLER, M.D.;

C. A. HELLWIG, M.D.; and E. N. McCUSKER, M.D., *Halstead**

MEDULLARY SPONGE KIDNEY has been recently reviewed in the American urological literature by Murphy and associates, who added seven cases, including one patient on whom nephrectomy was performed with the possible diagnosis of tuberculosis, papillitis, or a bizarre calcified papillary tumor. Miller in 1962 stated that his patient, a 70-year-old man, was the oldest patient reported with this disease. Abeshouse and Abeshouse in 1960 reviewed the literature on the subject and reported five cases; Pennisi and Bunts also reported five cases, including roentgenographic description. Ekstrom *et al.* (1959) presented 34 cases consisting of 23 men and 21 women with 15 pathological descriptions, and reviewed the literature extensively. They cite that Beitzke (1908) reported a case of co-existent medullary sponge kidney and duplication of the renal pelvis and ureters. Voth in 1949 described a case, calling it microcystic (thyroid-like) kidney. The foreign literature on the subject has been much more extensive than the American. Lenarduzzi first described the radiographic findings in 1939.

Our patient, a 67-year-old white woman, constitutes the second case report of medullary sponge kidney with co-existent duplication of the renal pelvis and upper ureters.

Case Report

S. A. H., a 67-year-old white woman, was admitted to the Halstead Hospital May 21, 1962, with gross, painless hematuria of two days' duration. Seventeen years previously she had had a similar episode which persisted for one day; two years ago she had an episode lasting four days. At that time excretory urograms disclosed a duplication of the upper urinary tract on the right side. No cause of bleeding was ascertained. She had had no renal calculi, infection or renal trauma. The remainder of her present illness, past, family, and social history were noncontributory.

Physical examination revealed a rather obese, well-developed white female, weighing 170 pounds; blood

pressure 104/92, respirations 20 per minute, pulse 82 per minute, temperature 98.6° F. The physical examination was not remarkable except for right costovertebral angle tenderness to percussion. On admission laboratory examinations included: urinalysis, red in color, reaction 5.0, specific gravity 1.019, albumin 2 plus, sugar negative; the microscopic examination revealed the urine loaded with red cells.

A case report has been presented of a 67-year-old-white female with duplication of the upper right plevis and ureter, ureterocele, and medullary sponge kidney. This was complicated by massive hematuria persisting for ten days and requiring four units of whole blood. She had an uneventful postoperative course after nephrectomy. The pathologic findings were presented and the disease briefly discussed.

Hemoglobin was 11 gm., hematocrit 35 mm., wbc. 7,900 with a differential of 4 stabs, 69 polymorphonuclear neutrophils, 24 lymphocytes and 3 monocytes. Bleeding time was 3½ minutes, coagulation time 3½ minutes. Platelet count 189,500; prothrombin time 82 per cent; sedimentation rate 25 mm. per hour according to the Westergren method. Nonprotein nitrogen 32 mg. per cent, creatinine 1.5 mg. per cent, BUN 8 mg. per cent. Kline was non-reactive. Culture and sensitivities revealed no growth after 48 hours. Blood was group O, Rh positive, and the patient was typed and cross-matched for four units of whole blood. Roentgenograms revealed a normal chest; excretory urograms showed marked spurring and lipping of the lumbar vertebrae, renal shadows slightly enlarged with prompt bilateral excretion of contrast medium, and duplication of pelvis and upper ureter on the right (*Figure 1*). Indistinct lines of contrast medium radiated from all the calyces, most noticeable in the five minute film (*Figure 2*). A tentative diagnosis of duplication of the right renal pelvis and

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Figure 1. Right kidney: 5 minute excretory urogram. Note the contrast medium radiating from all calyces. The upper pelvis is poorly defined.

upper ureter, together with bilateral medullary sponge kidney was made.

On May 22, 1962, on cystoscopic examination, the bladder was found to be filled with numerous blood clots which were evacuated and a ureterocele was visualized on the right. Blood was seen to be present in the efflux from the right ureteral orifice. Retrograde urograms performed at this time showed filling of the lower pelvis only on the right side, with a filling defect measuring approximately 5 mm., present in the pelvis. Previously visualized contrast medium in the collecting tubules was not seen. The patient continued to bleed, with grossly red urine at every voiding, accompanied by some clots. The hematocrit fell to 27 mm. on May 26, 1962, and two units of whole blood were given. The patient was again cystoscoped on May 28, pyeloureterogram on the right was performed and the previously mentioned filling defect had disappeared. Bleeding continued and operation was advised.

On May 31, 1962, ten days after her admission, a right nephrectomy was performed, at which time a separate blood vessel to the upper pole of the kidney was found. Two additional units of blood were given. The patient made an uneventful recovery and was dismissed from the hospital on June 11, 1962.



Figure 2. The 5 minute intravenous urogram shows fine radiating lines of the contrast medium from all calyces.

Grossly, weight of the kidney was 125 mg; it measured 10.5 x 5.5 x 3.5 cm. There were two ureters, length 6 and 8 cm. (Figure 3). The lower pelvis was slightly dilated, measured 3 x 3 cm. and displaced to one surface. No tumors were seen. There were four papillae in this lower pelvis; the upper pelvis had two papillae. No stone was seen. The markings of the kidney tissue were indistinct. In the middle third of the kidney was a cyst with a smooth wall, measuring 12 mm. in diameter.

Microscopically, sections of three papillae of the lower renal pelvis showed many small cysts containing light stained material (Figure 4). The cysts had one layer of very low cuboid epithelium. The connecting tubules between these small cysts had normal columnar epithelium and there was no evidence of inflammation in the stroma. The blood vessels of these papillae were extremely numerous and were greatly dilated. In one area, large blood vessels protruded over the surface of the papillae, with loss of epithelium (source of hemorrhage, Figure 5). Sections of the cortex showed no dilated tubules and the glomerulae were of normal appearance. In the middle was a large cyst with low cuboid epithelium. The section of the upper portion of the kidney showed no cystic dilatation. A small fibroma was found in the



Figure 3. Surgical specimen: 2 ureters and pelvises. In the lower pelvis, 3 darker papillae are seen.



Figure 4. Microscopic picture of medullary cystic area. The epithelium in one layer is cuboid. There is no evidence of inflammation. $\times 150$.

medulla. There was no evidence of chronic pyelonephritis. The sections of the ureters were normal, they showed no inflammation.

Pathologic diagnosis: Double pelvis, and double ureter. Congenital microcystic kidney with hemangiectasis in papillae of lower pelvis (C. A. Hellwig).

Discussion

It is generally felt that this condition has a congenital etiology. Kampmeier points out "that every human individual during his fetal life normally passes through a period characterized by the presence

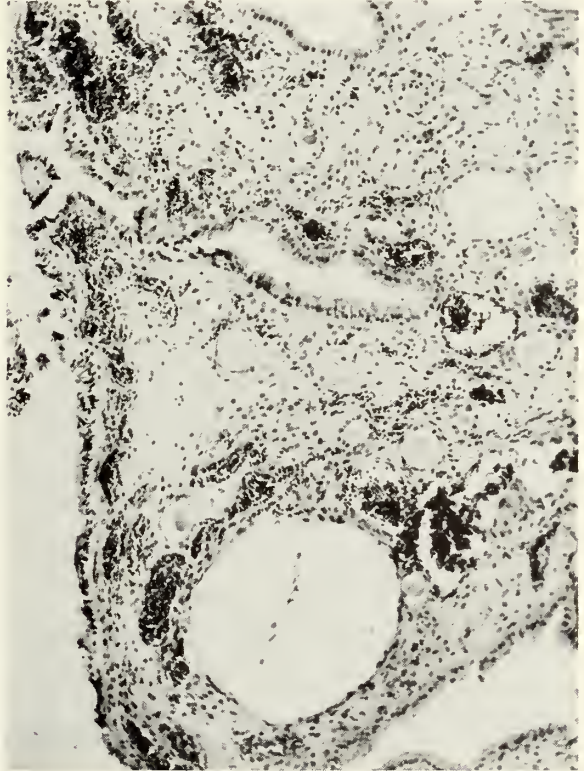


Figure 5. Hemorrhage from telangiectatic blood vessels. Defect in the epithelial lining of the pelvis. $\times 150$.

of numerous cystic renal tubules." Hogness and Burnell noted in similar cases that there was an increased frequency of associated anomalies, and described microcysts in the pancreas, stenosis of renal arteries, and clubfoot. As noted by Ekstrom *et al.*, the cases of Hogness and Burnell are not typical of medullary sponge kidney since they all died of insidious uremia. Likewise Ekstrom *et al.* note that additional urinary tract malformations, such as solitary renal cysts, calyceal cysts or diverticula, localized dysplasia, or ureterocele were demonstrated radiographically in five of their patients. They note, too, that the bleeding may be very severe in such cases, and cite a case of Cacchi and Ricci (1949) in which renal de-

capsulation was performed after 12 days of massive hematuria. These associated anomalies, as well as the ones found in our case, lend credence to the theory of congenital etiology. These cases have been classified as to the degree of involvement by Palubinskas, as mild, moderate, severe, or severe with superimposed morphological changes secondary to complications. He reviewed the urograms of 29 patients taken over a period of 16 months at the University of California. Though clinically severe, radiologically our case would fall into the mild classification. It is generally felt that surgery is contraindicated in the presence of bilateral disease, and in the absence of complications. Complications have consisted of hemorrhage, calculi formation, and infection. Operations because of mistaken diagnosis, calculi, and hemorrhage have been performed.

Prognosis: The prognosis generally is good and the renal function studies in most of the recorded cases are normal. The differential diagnosis generally included renal tuberculosis (the two diseases may co-exist), renal papillary necrosis, nephrocalcinosis, calyceal cysts, and tubular stasis.

References

1. Murphy, W. K., Palubinskas, A. J., and Smith, D. R.: Sponge kidney: Report of seven cases. *J. Urol.* 85:866-874 (June) 1961.
2. Miller, Frank: Sponge kidney. Report of a case in a seventy-year old man. *J. Urol.* 87:770-773 (June) 1962.
3. Abeshouse, B. S., and Abeshouse, G. A.: Sponge kidney: a review of the literature and report of five cases. *J. Urol.* 84:252-267 (Aug.) 1960.
4. Pennisi, S. A., and Bunts, R. C.: Sponge kidney. *J. Urol.* 84:246-251 (Aug.) 1960.
5. Ekstrom, F., *et al.*: Medullary Sponge Kidney. Stockholm: Almqvist & Wiksell, 73 pp., 32 figs., 1959.
6. Beitzke, N.: Ueber Zysten im Nierenmark. *Charite—Ann.* 34:285-293, 1908.
7. Voth, H. W.: Microcystic (thyroid-like) kidney. *Arch. Path.* 47:293-297 (March) 1949.
8. Lenarduzzi, G. (Pavado): Reporto pielografico poco commune (dilatatozione della vie urinaire intrarenali). *Radiol. med. (Tor)* 26:346-347, 1939.
9. Kampmeier, O. F.: A hitherto unrecognized mode of origin of congenital renal cysts. *Surg., Gynec. & Obst.* 36:208-216 (Feb.) 1923.
10. Hogness, J. R., and Burnell, J. M.: Medullary cysts of the kidneys. *A.M.A. Arch. Int. Med.* 93:355-366 (March) 1954.
11. Cacchi, R., and Ricci, V.: Sur une rare maladie kystique multiple des pyramides renales, le "rein en eponge," *J. d'uro.* 55:497-519, 1949.
12. Palubinskas, A. J.: Medullary sponge kidney. *Radiology* 76:911-919 (June) 1960.

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Esophageal Obstruction

Lower Esophageal Ring Formation: The so-called "Schatzki's Ring"

ALFRED M. TOCKER, M.D.; LILIA RODRIGUEZ TOCKER, M.D.;
and ENRIQUE MOSZKOWSKI, M.D., *Wichita**

LOWER ESOPHAGEAL RING, as originally described by Schatzki and Gary⁶ and Ingelfinger and Kramer in 1953, is an annular ring of the distal esophagus of unknown or at least of questionable etiology and pathogenesis. Associated with a sliding diaphragmatic esophageal hiatus hernia, the ring is a circumferential diaphragm-like intrusion on the lumen at an abnormally placed esophagogastric junction. (Such lower esophageal rings have never been observed when the esophagogastric junction is located in its normal position.) The condition has been recognized and reported with increasing frequency,^{1, 2, 5, 8} although the probability that this is a newly recognized clinical entity is quite questionable.

Although an incidental finding in asymptomatic individuals, occasionally lower esophageal ring formation gives rise to a typical clinical syndrome (Schatzki and Gary)⁶. Patients (who average over 50 years in age) experience sudden dramatic episodes of pain or discomfort on swallowing solid food which produce obstruction at the site of the ring. Recurrent intermittent dysphagia, substernal pain, nausea and vomiting follow ingestion of inadequately masticated solid food. Weakness, weight loss and malnutrition may occur in the more severe cases.

The diagnosis is usually made by x-ray studies—barium swallow and esophagram—which reveal the annular ring-like diaphragm at its characteristic location in the lower part of the esophagus. The ring is rarely visible esophagoscopically, and endoscopic examination usually reveals no evidence of inflammation, scarring, ulceration or tumor. At times the diagnosis is made at operation.

These patients learn to masticate food very well to avoid difficulties, and often avoid solid foods. An impacted bolus of food may require treatment with a proteolytic enzyme preparation or may have to be removed esophagoscopically. In the milder cases, careful selection of food and good mastication may be adequate. In the more advanced cases, surgical therapy is indicated. This varies from simple division of a

very thin diaphragm and various plastic procedures to complete excision of the constricting ring.

Case Report

F. P., a 75-year-old white female, was hospitalized June, 1962, with the complaint that she was unable to keep down any food. Nausea, vomiting and choking on swallowing had gradually become worse over the past year until she was unable to swallow even

Since the report of Schatzki and Gary in 1953 of an idiopathic concentric narrowing of the lower esophagus giving rise to a typical clinical syndrome, there has been much discussion as to whether or not this represents a clinical entity. The authors present a case report, discussing diagnosis and treatment of the so-called "Schatzki's Ring," and stress the necessity of considering the possibility of lower esophageal ring formation in cases of partial, complete or recurrent esophageal obstruction.

water, and had become weak with a weight loss of 24 pounds in that period of time. Her weight was 88 pounds at the time of her admission. Actually her symptoms had been present at least ten years, with a long history of indigestion, heart burn and "stomach trouble," but had become progressively worse during the past year. She also stated she experienced frequent headaches, dizziness and palpitations or fluttering of her heart. She was known to be a mild diabetic, for which she took one Orinase® (Roche Laboratories) tablet daily. She gave a history of heart failure a year previously and was taking 0.1 mgm. digitoxin five days a week and a Hydropres-Ka-50® (Merck & Company, Inc.) tablet daily.

The patient was thin, frail, and obviously weak. She had severe dorsal kyphosis, scoliosis of the vertebral column, extensive osteoporosis and arthritis. Some years previously she had had bilateral hip nail-

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ings. She had arteriosclerotic heart disease, was hypertensive (BP 180/110) and mildly diabetic. Ophthalmoscopic examination of the fundi showed narrowing of the arterioles and A-V nicking. Examination of the heart revealed a normal sinus rhythm and a grade 2 systolic murmur at the mitral valve. A_2 was greater than P_2 . ECG showed a first degree A-V block and was suggestive of hypopotassemia. Chest x-ray revealed a heart of normal size with a dilated and tortuous aortic arch. The lungs were emphysematous. Fine moist rales were heard at the right pulmonary base and a few crepitant rales at the left base posteriorly. Timed and total vital capacities were greatly reduced. She was tender to palpation in the epigastrium but otherwise examination of the abdomen was negative. Cholecystogram was normal. Levine tubes could be passed into the stomach without difficulty. Esophagoscopy, made difficult by the dorsal kyphosis, revealed no evidence of obstruction, tumor, ulceration, scarring or inflammatory reaction, with passage of a 9-53 cm. esophagoscope. Barium studies revealed a large esophageal hiatal diaphragmatic hernia (measuring about 7 cm. in its greatest diameter), what was reported as "a peculiar narrowing at the esophageal gastric junction," a diverticulum of the second portion of the duodenal loop, extensive diverticulosis of the sigmoid colon, and visceroptosis. She had used a cane when walking since her bilateral hip nailing operations. Except for this, the lower extremities were normal.

With improvement of her cardiac status and nutrition (with feedings by a Levine gastric tube), a transthoracic Allison type of repair of the large diaphragmatic esophageal hiatal hernia was accomplished June 27, 1962. Although her immediate postoperative course showed some improvement, she was able to swallow only liquids and a small amount of semi-soft foods. More solid foods caused her to vomit. Barium studies were reported as follows: "The examination of the pharynx and esophagus shows a slight holdup of the barium at the cardio-esophageal junction. This is certainly not marked and barium does enter the stomach readily. There is slight dilatation of the lower esophagus."

Again a 9-53 cm. esophagoscope was passed to what was estimated to be the cardio-esophageal junction. Further passage of the scope was limited by the dorsal kyphosis, but a F-26 esophageal dilator was passed through the esophagoscope into the stomach without difficulty.

However, the patient did not improve, and it was felt that the diaphragmatic esophageal hiatus might have been closed too tightly at operation. Therefore, on July 10, 1962, she was re-explored transthoracically. A small incision was made in the fibrous tendinous portion of the diaphragm and a finger introduced through a small gastrotomy incision into the

esophagus. About 4 cm. above the esophageal hiatus in the diaphragm a tight obstructing ring was palpated. The operator's index finger could be passed through this ring only with considerable force, and the ring tightly encircled the finger and could not be adequately dilated. The constricting tissue could be palpated externally through the esophagus with the palpating finger in place, but otherwise the esophagus appeared normal externally. A longitudinal incision was made into the esophageal lumen over this definite and well-developed band (*Figure 1*) which neither esophagoscopy nor several previous barium swallow x-ray studies had revealed. The band was

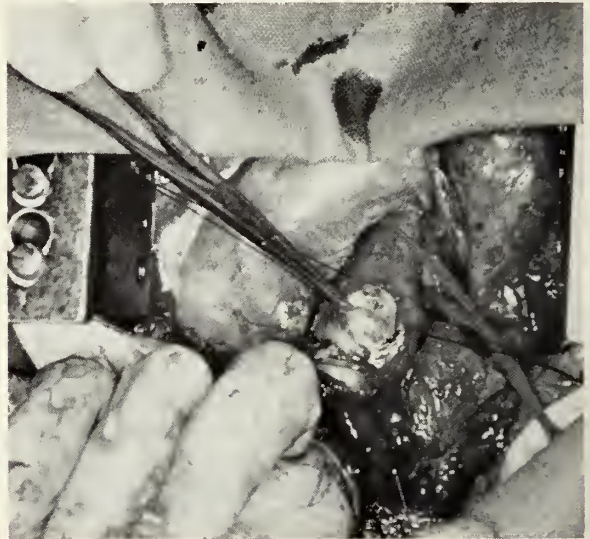


Figure 1. Lower esophageal ring demonstrated at operation by the operator's index finger in the esophagus. The hemostat points to the very definite and well-developed lower esophageal ring formation.

further divided posteriorly, and a section of the constricting tissue removed for biopsy. Following this a finger could be passed easily in all directions. The opening into the esophageal lumen was closed transversely (Heinecke-Mikuliez method). The gastrotomy was then closed, the diaphragmatic opening repaired, and the chest closed in the usual manner with drainage. The pathological diagnosis of the tissue removed was esophageal mucosa with chronic inflammation and scar tissue compatible with "Schatzki's ring."

Postoperatively the patient was at first able to swallow only liquids and semi-solid foods for a time. Barium swallow early in the postoperative period revealed narrowing of the distal esophagus, which was attributed to the chronic esophagitis. This responded in time to antacid medications, phenobarbital and belladonna. When seen September 11, 1962—two months after her second operation—she was eating all solid foods and had gained 10 pounds. Fluoroscopy and x-ray (*Figure 2*) at that time revealed much less

narrowing of the esophagus, with barium readily entering the stomach. Since that time the patient has reportedly continued to do well, receiving only 0.1 mgm. digitoxin daily, 250 mgm. Diuril® (Merck Sharp & Dohme) three times weekly, and antacids. Her mild diabetes has been controlled by diet alone.

Discussion

The above report presents a case in which a lower esophageal ring was found which was compatible pathologically with the clinical entity described by Schatzki in 1953.

While it might well be argued that such an esophageal constriction, especially when associated with other pathology, may represent the results of chronic esophagitis, such lesions, which are now being recognized and reported with increasing frequency, do have certain clinical and pathological characteristics. The location of the concentric narrowing at the esophagogastric junction, the microscopic structure and x-ray appearance, and the elusiveness of the lesion to endoscopic visualization are characteristic of the so-called "Schatzki's ring." Barium swallow studies and

esophagrams are the most consistent means of diagnosis, but even these studies, as demonstrated in the reported case, may fail to show the pathology. In that the caliber of the vestibule is larger than the remainder of the esophagus, the over-all diameter at the site of the ring is not, as a rule, remarkably narrowed. However, the maximal distensibility of the esophagus may be definitely limited at the level of the ring. It is suggested that any case in which esophageal obstruction must be considered, the possibility of lower esophageal ring be kept in mind, and special and careful studies be made to demonstrate or rule out this possibility.

Summary

Lower esophageal ring is a concentric static narrowing in the distal end of the esophagus located at the esophagogastric junction and associated with diaphragmatic esophageal hiatal hernia. Histologically, it is the undersurface of the projecting ridge where the transition from the squamous esophageal epithelium to the cylindrical gastric epithelium takes place. Since its recognition as a clinical entity in 1953 by Schatzki, this condition has been recognized and reported with increasing frequency.

The possibility of the presence of such a lower esophageal ring must be considered in all cases in which esophageal obstruction is a probability and its presence demonstrated or ruled out by careful barium swallow studies and esophagrams.

Although usually asymptomatic, it may give rise to symptoms of partial or complete obstruction of the esophagus. These symptoms include substernal pain of varying degrees, dysphagia, nausea, vomiting, weakness, weight loss and malnutrition.

The milder cases may be managed by careful eating habits—good mastication and avoidance of solid foods. Obstruction by a poorly masticated bolus at the ring may be relieved at times by a proteolytic enzyme preparation. Esophagoscopy removal of an impacted bolus of food may occasionally be necessary. Surgical treatment, indicated in the more severe cases, varies from simple division of the obstructing diaphragm to complete removal of the obstructing ring.

An advanced symptomatic case requiring surgical treatment is presented.

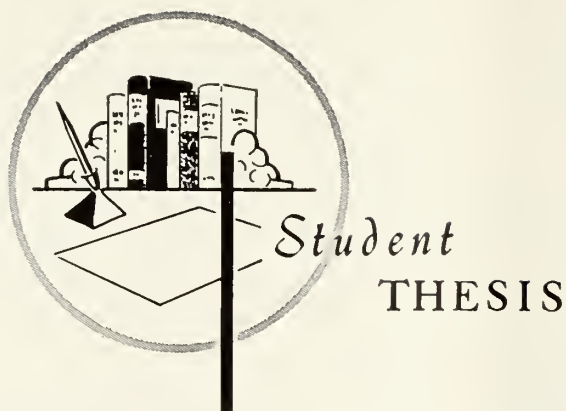
References

1. Bugden, W. F., and Delmonico, E., Jr.: Lower esophageal web. *J. Thor. Surg.*, 31:1-18, 1956.
2. Carpathios, J.: Lower esophageal (Schatzki's) ring. *Arch. of Surg.*, 84:34-35, 1962.
3. Gary, J. E., and Schatzki, R.: Radiologic examination of the gastrointestinal tract. *New England J. Med.*, 251:1052-1058, 1954.
4. Ingelfinger, F. J., and Kramer, P.: Dysphagia pro-

(Continued on page 314)



Figure 2. Post-operative x-ray (barium swallow) reveals adequate opening at previously narrowed lower end of esophagus with barium now readily entering the stomach.



The Control and Effects of Aldosterone Secretion

JERRY A. KIRKLAND, M.D.,* *Kansas City, Missouri*

SINCE CONN FIRST described the clinical syndrome of Primary Aldosteronism in 1955 many clinical and experimental observations concerning this hormone have been published. Much of this information is repetitive and contradictory. The purpose of this paper is to present recent findings which relate to the mechanisms involved in the homeostatic and pathologic secretion and effects of aldosterone.

Homeostatic Secretion

Under this heading will be discussed those factors which affect aldosterone secretion, and in turn, the effects of secretion on metabolism.

A. Control of Secretion

1. *ACTH*: Most investigators believe that aldosterone secretion is largely independent of pituitary control. Large amounts of ACTH produce little or no change in aldosterone output. In patients with long-standing hypopituitarism on an unrestricted salt intake, the excretion of aldosterone is low. The capacity of the adrenal gland to respond to suitable stimuli with an increased aldosterone secretion likewise falls off slowly after loss of anterior pituitary function. These findings suggest that corticotropin by maintaining gland size, exerts a tropic effect on the adrenal cortex, preserving its capability to increase the rate of synthesis and release of aldosterone.

2. *Changes of Posture*: Aldosterone production is

increased by standing. This results in a greater sodium reabsorption and potassium excretion. The accompanying hemodynamic change has an additive effect with aldosterone upon sodium retention, but largely cancels out the effect of aldosterone upon potassium excretion.

3. *Electrolytes and Fluid Volume*: Sodium deprivation may be followed by an increased urinary aldosterone excretion, although this is not a potent stimulus per se. Several observations indicate that the effect of a changing sodium concentration is due to its effect on extracellular fluid volume. For example, when the extracellular volume is expanded by infusions of water and pitressin, the secretion of aldosterone falls, despite hyponatremia. If normal saline is infused, aldosterone again diminishes even though the sodium concentration remains the same. If the extracellular fluid volume is expanded with hypertonic saline without changing the total body water, aldosterone excretion again falls. When the total body fluid is diminished by dehydration, despite hypernatremia aldosterone rises. In these experiments aldosterone secretion was related inversely to extracellular fluid volume.

Phlebotomy is regularly followed by an increased aldosterone excretion. With spontaneous hemodilution, the secretion of aldosterone diminishes, and after red cell reinfusion, the level falls even further, indicating the importance of intravascular volume in the control of secretion. Acute volume reduction is also a stimulus to epinephrine and norepinephrine production. These pressor effects upon aldosterone secretion are mentioned below.

* This is one of a group of theses written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be best by the faculty at the school. Dr. Kirkland is now serving internship at Kansas City General Hospital, Kansas City, Missouri.

In conditions remarkable for sodium depletion, hypertrophy of the adrenal zona glomerulosa is found. Atrophy of this area occurs with potassium depletion.

Some authors maintain that in normal physiological situations, sodium depletion is a more effective stimulus to aldosterone output than simple dehydration, potassium loading or ACTH.

Potassium depletion lowers and potassium loading elevates aldosterone secretion. This variation is not necessarily dependent upon a concomitant alteration in intravascular volume, and is more potent than changes produced by sodium. In some studies sodium depletion did not produce a rise in aldosterone secretion unless potassium was provided in the diet. When potassium was given, the increases in aldosterone secretion were related to the degree of induced hyperkalemia associated with potassium retention. Therefore, the state of potassium balance is an important factor in the regulation of aldosterone secretion.

4. *Carotid Baroreceptors*: Bartter and his colleagues have added support for the concept that arterial baroreceptors constitute the afferent limb of a reflex arc concerned with primary regulation of aldosterone secretion. Their findings can be tabulated as follows: (1) They found that the increased aldosterone secretion resulting from thoracic caval constriction was nullified by rapid blood infusion above the constriction. (2) The aldosterone value returned to control levels when the constriction was released. (3) After bilateral section of the vagus nerve in the neck, caval constriction again resulted in an increased aldosterone level. But, when the constriction was released, the level did not return to normal as with the nerves intact. (4) Stripping of the carotid arteries of their nerve supply from above the carotid sinuses to low in the neck abolished the increased secretion and elevated blood pressure which otherwise follow caval constriction. (5) Caval constriction produced an increased aldosterone secretion, sodium retention and ascites. Bilateral denervation of the thyro-carotid arterial junctions reversed this condition by causing natruresis, loss of ascites and weight reduction. (6) Of the following variables measured during inferior vena caval and common carotid arterial constriction and blood loss: intracarotid blood pressure, peripheral arterial blood pressure, right atrial pressure, femoral venous pressure and hematocrit, only diminished intracarotid pulse pressure was consistently associated with increased aldosterone secretion.

From the above observation, it was concluded that impulses leading to decreases in aldosterone secretion were conveyed centrally by the vagus nerves. Increases in secretion depended upon the integrity of nerves arising at the thyro-carotid arterial junction. They

speculated that from this region baroreceptors responding to an elevation in intracarotid pulse pressure reflexly inhibit the central nervous release of a neuro-hormone thought to mediate increases in aldosterone secretion.

These authors are proposing a system where identical pressure receptors initiate graded impulses to the same stimuli along different nerve pathways to the same central area to influence the release of the same stimulating hormone. But whether or not this hormone is released depends upon which nervous pathway carries the impulse. It is difficult to understand how the nervous pathway per se could account for the changes in secretion observed. It would seem that several modifications are needed for such a system to work: (1) Either the arterial receptors respond differently to a given pressure stimulus, or (2) The substances released at the central neuroeffector junctions have antagonistic pharmacologic effects, or (3) Two different central hormones are present, one with a stimulating effect and the other with an inhibiting effect on aldosterone secretion. The authors also failed to discuss what function, if any, the carotid sinus reflex might have in a scheme involving varying carotid pressures.

Hypertrophy of the zona glomerulosa has been found after denervation of the carotid sinus, and in cases of congestive heart failure which were accompanied by an elevated aldosterone level. From this it is seen that pressoreceptor reflexes may play an important influence on the renal adjustment of fluid volume.

In contradiction to Bartter's results, Carpenter and his colleagues found that complete bilateral denervation of the carotid baroreceptor areas did not prevent the hypersecretion of aldosterone following thoracic vena caval constriction. Biglieri and Ganong found an elevation in the rate of aldosterone secretion after proximal common carotid artery constriction, but none after similar constriction in a hypophysectomized dog. They suggest that if these baroreceptors influence aldosterone secretion, the acute effect is mediated by way of an ACTH mechanism.

In two dogs with chronic inferior vena caval constriction, denervation of the aortic arch had no effect on sodium retention. In agreement with Bartter's results was the finding that bilateral vagotomy with destruction of afferent fibers from the aortic arch baroreceptors failed to prevent the rise in aldosterone secretion that resulted from thoracic caval constriction. In disagreement however, they found that sodium retention continued unabated after carotid and aortic baroreceptor denervation with caval constriction.

It is not the purpose of this paper to decide which results are correct, but only to present experimental findings. An interesting observation is that of finding

an increased urinary aldosterone excretion in patients with constrictive pericarditis. This may have resulted from: (1) pericardial constriction of the inferior vena cava; (2) generalized increase in superior and inferior vena caval pressures; or (3) a lowered intracarotid pulse pressure.

5. *Splanchnic Receptors*: Holzbauer and Vogt have concluded that the factors of anoxia without change in blood volume and acute blood loss result in an increased aldosterone secretion through mediation over a splanchnic pathway. The effect was abolished after dividing the splanchnic nerves. Anoxia must have influenced structures other than volume receptors.

Other investigators have found that bilateral splanchnic nerve section with the interruption of afferents from abdominal baroreceptors had no effect on the hypersecretion of aldosterone observed after chronic thoracic inferior vena caval constriction.

6. *Atrial Receptors*: The right and left atria contain a network of nerve terminals similar to those in the carotid sinus. Stretch receptors are stimulated by increasing blood volume to initiate the transmission centrally of impulses to initiate volume reduction. After stretching the left atrium impulses reaching the hypothalamus via the vagi inhibit the release of the antidiuretic hormone. Impulses resulting from stretch of the right atrium are imagined to inhibit the release of an aldosterone-stimulating hormone from the diencephalon.

7. *Diencephalic Control*: Some investigators have considered that the diencephalon may have an important hormonal influence upon aldosterone output: (1) The regulation of aldosterone secretion does not require an intact adrenal innervation. (2) Profound changes in the rate of aldosterone secretion occur without an initial change in the blood electrolyte concentration. (3) A reduction in adrenal venous aldosterone has been found following decapitation or decerebration at the mid-collicular level, but not after spinal cord transection or decortication. (4) Lesions in the mid-brain and near the posterior hypothalamus, and the removal of the diencephalon including the pineal are associated with a fall in adrenal vein aldosterone. (5) The administration of extracts of beef diencephalon (including the pineal) or extracts of pineal alone have been followed by an increased aldosterone secretion in a mid-collicular decerebrate dog. (6) A lipid factor, termed adrenoglomerulotropin, obtained from pineal extracts was noted to stimulate the output of aldosterone. A second pineal factor, termed anticorticotropin, inhibited the secretion of hydrocortisone, and reduced aldosterone output even more. From this Farrell has suggested that the secretion of aldosterone is under the control of an excitatory-inhibitory system involving the interplay of pitu-

itary corticotropin and pineal adrenoglomerulotropin and anticorticotropin. Some authors have concluded that depressed aldosterone secretion results from only those hypothalamic lesions which involve the median eminence. Farrell, too, has stated that an effective lesion involves the subcommissural area, and not necessarily the pineal. Others believe that the source of the stimulating hormone is from an area of central gray substance around the cerebral aqueduct just posterior to the pineal.

Wurtman, however, has stated that alterations in a circulating pineal hormone, either following pinelectomy or after injection of extracts, did not affect the zona glomerulosa activity or potassium retention. He found too, that total decapitation did not result in reduced aldosterone secretion if the carotid arteries and jugular veins were left intact.

8. *Renal Control*: The infusion of angiotensin II and other pressor substances produces a significant and consistent increase in the secretory rate of aldosterone whether or not sodium depletion is present. In addition to aldosterone, the infusion of renin and angiotensin II in concentrations too small to alter arterial blood pressure results in an increased secretion of hydrocortisone and corticosterone in hypophysectomized and nephrectomized animals. The increase noted in the glucocorticoids was relatively greater than that of aldosterone. Reduction in angiotensin dosage reduced the increment in glucocorticoid secretion without reducing the increment in aldosterone secretion. The modifications produced by these pressor substances suggest that changes in pressure or flow to a particular region may be important.

Tobian has postulated that the renin producing juxtaglomerular cells (JG cells) located in the media of the renal afferent arterioles act as baroreceptors responsive to the degree of filling of these vessels. These cells would respond to a decreased stretch of the afferent renal vessels by releasing renin, leading to augmentation of aldosterone output, and vice versa. A marked elevation of aldosterone secretion is usually found in malignant hypertension where the major pathology is due to renal ischemia, and involves the release of renin from the juxtaglomerular apparatus, which then effects the release of angiotensin from a plasma globulin. Hyperaldosteronism found with hypertrophy and hyperplasia of the juxtaglomerular apparatus likewise suggests an influence of the kidney, or of a renin-angiotensin system on adrenal cortical secretion. The basal secretion of aldosterone, hydrocortisone, and corticosterone has been found lowered by nephrectomy.

Indirect evidence for a renal-adrenal influence comes from the observation that the degree of granulation of the JG cells is directly related to the amount of extractable renin in the kidney and to the width of

the adrenal zona glomerulosa. A parallel increase in these three parameters has been noted in conditions of low sodium intake where the renal artery pressure is low. With a high sodium intake and high renal artery pressure, these parameters show a parallel decrease.

An interesting observation is that the administration of desoxycorticosterone causes atrophy of the juxta-glomerular cells and depletion of renin.

Additional evidence for the renal production of an aldosterone-stimulating hormone (ASH) is supplied from the observation that hypophysectomized animals respond to acute blood loss by increasing the output of renin and aldosterone. Whereas, hypophysectomized and nephrectomized animals fail to respond to acute hemorrhage by increasing aldosterone production.

From these findings it is concluded that aldosterone secretion is controlled by a renal-adrenal endocrine system involving the release of a trophic hormone, angiotensin. Aldosterone by increasing sodium retention might serve to improve renal circulation, thereby limiting the production of the trophic hormone.

Most patients with uncomplicated essential hypertension excrete normal amounts of aldosterone, although the mean level of excretion may be higher than in normotensives. The mean level was found elevated further when renal complications occurred. Hypersecretion of aldosterone is usually found in malignant hypertension with severe renal ischemia.

A clinical condition almost identical to Conn's syndrome may occur following unilateral renal artery occlusion, again emphasizing the factor of ischemia.

Carpenter believes that the kidney releases an increased amount of an aldosterone-stimulating hormone in response to a condition of chronic thoracic caval constriction and sodium depletion, as occurs in hepatic cirrhosis with ascites.

B. The Effects of Secretion

Aldosterone has a direct effect on the renal tubule to accelerate the retention of sodium chloride and the elimination of potassium. Aldosterone increases the maximum concentration gradient for sodium which can be maintained across the distal renal tubular cells, thereby increasing the tubular reabsorption of sodium. Increasing the maximum transport velocity may be accomplished by providing more carrier sites for the reabsorption of sodium.

Aldosterone and corticosterone increase the renal excretion of H_3O^+ and K^+ in exchange for reabsorbed Na^+ . Cortisone promotes tubular reabsorption of sodium in exchange for potassium without any increase in the output of acid.

A negative magnesium balance, with an increased magnesium excretion in the urine and feces is found in primary aldosteronism. Some authors believe the action of aldosterone on cell potassium may be

partly secondary to a primary action on intracellular magnesium.

Aldosterone administration results in a lowered renal clearance of free and conjugated 17-hydroxycorticosteroids, 17-ketosteroids, dehydroepiandrosterone, and androsterone. The chemical mechanism involved is not known.

Aldosterone, though not notably active in the suppression of inflammation, is a most potent anti-toxic agent in that it will correct the hemodynamic alterations produced by endotoxins of gram negative bacteria injected into animals.

Aldosterone has a direct digitalis-like effect on the myocardium, and may serve to support cardiac function in stressful situations.

Since aldosterone is oxygenated at the C-11 position, it has considerable glucocorticoid-like activity. This is probably of little physiological significance because of its relatively low serum concentration as compared to hydrocortisone.

Pathological Secretion

The clinical conditions produced by hypersecretion of aldosterone are:

A. Primary Aldosteronism

1. cortical adenoma
2. bilateral adrenal hyperplasia
3. malignant tumors of the adrenal cortex
4. congenital adrenal hyperplasia (salt losing type)

B. Diseases with overproduction of aldosterone without edema

1. hypohydration; sodium loss or restriction
2. sodium losing nephritis
3. familial periodic paralysis
4. essential and malignant hypertension
5. diuretics
6. untreated diabetes insipidus
7. untreated diabetes mellitus

C. Diseases with overproduction of aldosterone, sodium retention and edema

1. hepatic cirrhosis with ascites
2. nephrotic syndrome
3. cardiac failure
4. severe rheumatoid arthritis and other collagen disease
5. idiopathic edema
6. chronic glomerular nephritis
7. idiopathic hypoproteinemia

D. Conditions produced by an excess of both aldosterone and 11-hydroxycorticosteroids

1. Cushing's syndrome
2. pregnancy and toxemia of pregnancy
3. postoperative state
4. ACTH stimulation
5. following pneumoencephalography

6. emotional stress
7. adrenal cortical carcinoma

Since the abnormal level of aldosterone in all conditions except primary aldosteronism occurs secondarily in response to a pathological influence, the final discussion is restricted to Conn's syndrome.

The syndrome of findings in primary aldosteronism is caused by a primary secretory hyperfunction of the cells of the adrenal zona glomerulosa, although infrequently an excessive production of other adrenal steroids is found as well. The amount of aldosterone secreted in normal individuals on unrestricted diets varies from 100-400 μ g daily, with urinary values of under 6 μ g. In Conn's syndrome secretory amounts over 600 μ g and urinary amounts over 100 μ g daily are usually found.

The clinical findings are as follows:

1. arterial hypertension—the most consistent physical finding, present in nearly 100 per cent of cases.
2. excessive thirst
3. polyuria and nocturia
4. muscular soreness or weakness
5. headache (occipital or frontal)
6. periodic attacks of weakness and paralysis
7. diarrhea sometimes during periods of muscular weakness
8. decreased sweating
9. intermittent paresthesias and tetany
10. no edema (nearly 100 per cent of cases)

The laboratory findings are:

1. low serum potassium
2. low total body potassium
3. elevated serum and total body sodium
4. low total body chloride
5. elevated serum pH, bicarbonate with hypokalemic alkalosis
6. GFR may or may not be somewhat reduced
7. reduced Na/K ratio in the urine
8. inability to concentrate urine; low urine specific gravity
9. proteinuria
10. elevated urinary aldosterone
11. low Na/K ratio in saliva and feces
12. low sweat sodium
13. low sodium and high potassium excretion
14. EKG changes consistent with low serum

potassium: low T waves, depressed ST segment, precordial U waves, and QT prolongation

Almost all the findings are caused by the effect of aldosterone upon electrolyte metabolism.

The hypertension is thought to result from a reduced potassium and increased sodium in the muscle cells of the arterioles, which sensitizes them to the pressor effects of norepinephrine.

The symptoms of muscular weakness and attacks of

paralysis are due to intracellular potassium depletion.

The diabetes-insipidus-like syndrome of polydipsia and polyuria that many patients with hyperaldosteronism exhibit is attributed to the nephropathy induced by hypokalemia. Potassium deficiency by itself can cause both thirst and polyuria. Some have speculated that the thirst may be produced by a direct biochemical stimulus to the thirst center.

An interesting finding is the lack of edema despite sodium and water retention. Some believe that much of the increased total body sodium has gone to replace the intracellular potassium which has been excreted. The result is only a slightly increased extracellular sodium and fluid volume. In support of this belief is the finding that prolonged potassium administration has little or no effect on the symptomatology, possibly due to an excess intracellular sodium held in place by an elevated aldosterone level. Conversely, patients with Conn's syndrome show no reduction in potassium excretion when given low potassium diets. Another interesting finding to help explain the absence of edema in the presence of an elevated aldosterone secretion is that a rapid infusion of normal saline results in a rapid sodium excretion. Such a rapid change in glomerular filtration rate might be a factor limiting further increases in this chronically expanded state which would lead to edema formation.

The frequent finding of proteinuria probably results from potassium depletion nephropathy and hypertension.

Summary

This paper has presented recent information concerning the control and effects of aldosterone secretion. The control of secretion was discussed by organizing under eight headings some important findings of experimental physiology and observations taken from disease states remarkable for abnormal aldosterone secretion. The effects of aldosterone upon metabolism were listed and related where possible to the findings in Conn's syndrome.

EDITOR'S NOTE: References may be obtained by writing the JOURNAL, 315 West 4th Street, Topeka, Kansas.

Esophageal Obstruction

(Continued from page 309)

duced by a contractile ring in the lower esophagus. *Gastroenterology*, 23:419-430, 1953.

5. Kramer, P.: Frequency of asymptomatic lower esophageal ring. *New England J. Med.*, 254:692-694, 1956.

6. Schatzki, R., and Gary, J. E.: Dysphagia due to a diaphragm-like localized narrowing in the lower esophagus. "Lower esophageal ring." *Amer. J. Roentgenol.*, 70:911-922, 1953.

7. Schatzki, R., and Gary, J. E.: Lower esophageal ring. *Amer. J. Roentgenol.*, 75:246-261, 1956.

8. Trinkle, J. K.: Lower esophageal ring. *Ann. of Surg.*, 155:207-211, 1962.



Refractory Anemia, Changing Heart Murmurs, Jaundice and Paroxysmal Pains in the Bones and Abdomen

Case Presentation

Today's case is that of a 24-year-old unmarried, Negro woman who entered the University of Kansas Medical Center for the tenth time on April 12, 1961, and expired on the same day.

About three weeks before admission she had begun having headaches and pains in the abdomen, chest and legs. The pain was not relieved by aspirin. She had been seen in our emergency room on April 9, 1961, at which time her hemoglobin was 7.9 grams per cent, and her hematocrit was 23 ml. per cent. The symptoms persisted, and on the day of admission she developed severe lower abdominal, hip and leg pain for which she again came to the emergency room. Her hemoglobin was found to be 5.6 grams per cent, and her hematocrit was down to 18 ml. per cent. Because of these findings she was admitted to the hospital.

On admission the patient appeared to be a well developed but emaciated and chronically ill woman. Her pulse was rhythmical and the rate was 110. Her respiratory rate was 28. The blood pressure was 90/60. Her skin was dry, but was not otherwise remarkable. There was no lymphadenopathy. There was scleral icterus but no other abnormality of the eyes. The ears, nose, and throat were normal. The neck was supple. The carotids and the thyroid were described as being within normal limits, and the lungs were clear to auscultation and percussion. There was a significant right ventricular heave, and a grade II systolic ejection murmur was heard at the left sternal border. The pulmonary component of the

second heart sound was accentuated, as was the mitral component of the first sound. A third sound was present. The liver was firm, slightly tender and palpable 6 cm. below the right costal margin on inspiration. The spleen was not palpable. The extremities were tender to palpation. No gross neurologic defect was noted.

The white blood count was 41,010 with 66 per cent neutrophils (58 per cent filamented), 20 per cent lymphocytes, 8 per cent monocytes, and 2 per cent myelocytes. There were 61 nucleated red blood cells per 100 white cells. The hemoglobin was 5.6 grams per cent, and the hematocrit was 19 ml. per cent.

The patient had first been seen at KUMC in 1948 when she was ten years old. At that time she was seen because of complaints of shortness of breath, weakness, and loss of appetite. Her mother described the child as having been sickly since birth. A heart murmur had been noted when she entered grade school at the age of five years. On her first admission to KUMC a systolic murmur was heard over a large area of the precordium, but it was reported to have been loudest at the mitral area. Her hemoglobin was 6.4 grams per cent, and a blood smear showed marked sickling. An electrocardiogram was within normal limits.

The second KUMC admission in June of 1949 was because of weakness, shortness of breath, and swelling of the ankles. These symptoms had been present for about two weeks at the time of admission to the hospital. Her pulse was 110; respiratory rate, 20; and blood pressure, 110/50. She was described as a well developed, moderately well nourished 12-year-old girl who looked acutely ill. Scleral icterus was reported at that time. There were large anterior and posterior cervical lymph nodes. Her chest was clear, but her heart was enlarged to per-

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cussion, and a systolic murmur was heard over the entire precordium. Her liver was palpable 5 cm. below the costal margin. The admission hemoglobin was 6.7 grams per cent, and it was 9.5 grams per cent at the time of her discharge. Liver function studies showed a thymol turbidity of 10 units; cephaline flocculation, 3 plus; serum protein, 8 grams per cent; direct serum bilirubin, 0.5 mg. per cent; indirect bilirubin, 2.9 mg. per cent; cholesterol, 183 mg. per cent with 60 per cent esters; and alkaline phosphatase, 20.6 units. An exploratory laparotomy was performed and a liver biopsy was obtained. This was reported as showing multiple milary granulomata. The patient was discharged after she recuperated from the operation.

The third KUMC admission was in June of 1954 because of nausea, vomiting, and pain in the right upper quadrant of the abdomen. Approximately one month before that admission the patient had developed right upper quadrant pain, nausea, and vomiting. She recuperated spontaneously.

The fourth KUMC admission was for blood transfusions because of very low hemoglobin. Her hemoglobin on admission was 7.3 grams per cent. Other laboratory work done on that admission showed a direct serum bilirubin of 0.5 mg. per cent (total serum bilirubin of 2.2 mg. per cent); alkaline phosphatase, 8.3 mm. units; cephaline cholesterol, 4 plus; thymol turbidity, 13 units; serum albumin, 5.15 grams per cent; and globulin, 3.85 grams per cent. The white count was 23,200 with 40 per cent neutrophils, 20 per cent lymphocytes, 32 per cent eosinophiles, 1 per cent basophiles, 7 per cent monocytes. In the Thorn test the eosinophile count at 8:00 a.m. was 7,500 per cubic mm.; at noon (after ACTH) it was 5,294. Blood volume studies showed a total blood volume of 100 ml. per kilogram and a total plasma volume of 72 ml. per kilogram. The total red cell mass was 28 ml. per kilogram. A gallbladder x-ray series that was performed at that time showed a large calculus in the gallbladder. The serum protein electrophoretic pattern was essentially normal.

The fifth KUMC admission, in August of 1957, was for a chief complaint of "heart beating fast." The patient had felt relatively well until the morning of admission, at which time she awoke with her heart beating very rapidly. She felt weak and extremely short of breath. She was admitted to the hospital, and showed considerable improvement after she received digitalis. A grade III apical diastolic rumble was first described during this admission. The mitral component of the first sound and the pulmonary component of the second sound were described as being accentuated.

Other physical findings were unchanged. The white count was 17,250 with 52 per cent neutrophils, 36 per cent lymphocytes, and 2 per cent monocytes. The hemoglobin was 5.5 grams per cent; hematocrit, 16 per cent; reticulocytes, 20 per cent. The direct bilirubin was 10 mg. per cent, and the total bilirubin was 20.5 mg. per cent. During this admission blood transfusions were given. After receiving the second unit of blood the patient developed an acute sickle cell crisis. After her recovery from the sickle cell crisis a supraclavicular lymph node biopsy was reported as showing "six lymph nodes," with no diagnostic commitment.

The sixth KUMC admission, in January of 1959, was for the purpose of receiving blood transfusions. Her hemoglobin was 5.6 grams per cent and her hematocrit was 19 ml. per cent on this admission. The patient was started on 100 mg. of isoniazid 3 times daily and 1,200,000 units of benzathine penicillin intramuscularly once a month.

The seventh KUMC admission, in November of 1959, was because the patient had an aching sensation in the upper right quadrant, severe abdominal pain, nausea, and vomiting. On the day before her admission her urine was very dark, but she had noted no change in the color of her feces. She again had marked scleral icterus. There was an accentuated mitral component of the first sound, a grade III pansystolic apical regurgitant murmur, and an accentuated pulmonary component of the second sound. The white blood count was 12,000 with 74 per cent neutrophils, 14 per cent lymphocytes, 9 per cent eosinophiles. The hemoglobin was 7.3 grams per cent. The direct serum bilirubin was 34.8 mg. per cent and the total serum bilirubin was 42.9 mg. per cent. The alkaline phosphatase was 10.1 mm. units. It was thought that the patient had acute cholecystitis. She subsequently underwent a cholecystectomy and choledochostomy. A liver biopsy which was done at the time of surgery showed hemosiderosis and cholestasis. A lymph node was excised, but it was not remarkable. In addition to the digitalis, she was given a low salt diet. After this hospitalization her physical activity was greatly restricted.

The eighth KUMC admission, in October of 1960, was because of chest discomfort that was described as a sensation of fullness that had been present for about one week before her admission. There had been no essential change in the physical findings. The sclerae were still icteric. The previously described heart murmurs were present, and the liver was still enlarged. On that occasion some moist rales were heard in the apices of both lungs. The tuberculin skin test was positive only in the second strength. Multiple cultures for tubercle bacilli were

negative. Many laboratory procedures were performed, but none was particularly helpful. After discharge from the hospital the patient became more severely dyspneic.

The ninth KUMC admission, in January of 1961, was for dyspnea, cough and fever. While hospitalized she required constant oxygen therapy, and complained continually of pain in various areas of her body. The physical findings had not changed significantly from the previous two admissions. She had continued to take digitoxin and the low salt diet; and on this occasion was again started on 100 mg. of isoniazid 3 times daily.

In the emergency room immediately preceding her last admission the patient received 50 mg. of meperidine at 9:00 a.m.; 60 mg. of codeine at 10:00 a.m.; 50 mg. of meperidine at 11:30 a.m.; and 8 mg. of morphine sulfate at 2:15 p.m. She was admitted to the hospital at 1:00 p.m. An intravenous infusion of 5 per cent glucose in water was started. At 4:30 p.m. the patient was found to be unresponsive. External cardiac massage was applied without success and she was pronounced dead at 5:00 p.m.

Dr. Mahlon Delp (moderator): Are there any questions of Dr. Tan?

Mr. Thomas A. Coppinger (student*): Was there a family history of anemia or jaundice?

Dr. U. W. Tan (resident in medicine): No.

Mr. Harry L. Stewart (student): Was there a history of hemoptysis?

Dr. Delp: The first time she was ever brought to the clinic she was brought in for two or three reasons. One was she was tired and weak. The second was that she was short of breath. The third was that she was cyanotic. And another one was that she was spitting up blood. She first came into the clinic at the age of ten.

Mr. Robert L. Druet (student): Were ulcers of the legs ever noted?

Dr. Tan: Yes.

Mr. Harry D. Haas (student): Could you describe the vital signs during the terminal event?

Dr. Tan: At four o'clock she was drinking water, and she was dead at four thirty. No doctors or nurses were there in the interval, but another patient had heard the patient making a noise and called the attendants who found her dead.

Mr. Coppinger: Had there ever been elevation of the C-reactive protein or ASO titers?

Dr. Tan: She had several "rheumatograms" which showed moderate activity. ASO titers were not greatly elevated.

Mr. Stewart: Was a pulsus alternans noted or did she have changing heart murmurs on the last admission?

Dr. Tan: No.

Mr. Druet: On her last admission were bowel sounds audible; was there abdominal distention; and was there a tympanic note on percussion?

Dr. Tan: Bowel sounds were present, and there was no distention.

Mr. Haas: What was the location of the leg pains? Specifically, was it in the joints or in the long bones?

Dr. Tan: It was in the long bones. The last time she was in she complained more bitterly of pain in the hip and in the thighs than at any other time.

Mr. Coppinger: Were cultures of lymph nodes taken?

Dr. Tan: Yes, and they were negative.

Mr. Stewart: Was there any family history of tuberculosis or any other possible exposure?

Dr. Tan: No.

Mr. Druet: Terminally were there physical findings of neurological disease?

Dr. Tan: No.

Mr. Haas: Was a bone marrow examination done?

Dr. Tan: The bone marrow showed erythroid hyperplasia and sickle cells.

Mr. Coppinger: Was a serologic test for syphilis done on the patient?

Dr. Tan: The VDRL test was non-reactive.

Dr. Delp: Mr. Stewart, may we have the EKG's?

Electrocardiograms

Mr. Stewart: A phonocardiogram was taken in 1957 on her fifth admission. A pansystolic murmur was demonstrated, and there was an opening snap. There was a third heart sound at the peak of the rapid filling wave. There was also a suggestion of a fourth heart sound and a diastolic murmur.

Dr. W. Graham Calkins (internist): It is hard to be sure that this was an opening snap because it fell about two hundredths of a second earlier than it should.

Mr. Stewart: The first EKG we will show was taken on her seventh admission in 1959. There is sinus rhythm. The rate is approximately 75. The axis is about 70 degrees. There is a suggestion of broadening of the P wave and possibly notching. The precordial leads are not remarkable. The EKG taken on the eighth admission in 1962 shows a rate of approximately 110. The mean QRS axis is about 80 degrees. The P-R interval is about 0.2 sec., which is prolonged for this rate. There is broadened notching of the P wave. In the precordial leads we

* Although a student at the time of this conference in December, 1961, he, like the others referred to as students, received the M.D. degree in June, 1962.

see tall R and deep S waves in V2 to V4, suggesting biventricular hypertrophy. There is flattening of the T wave and some slurring of the ST segment compatible with digitalis effects. The EKG taken on her ninth admission in 1961 (*Figure 1*) shows a sinus rhythm. The axis is almost 90 degrees. The P-R interval is again prolonged for this rate, and we still see the broad, notched P waves. The precordial leads show tall R waves and deep S waves. This is suggestive of biventricular hypertrophy, and with the tall RS component we cannot rule out right ventricular hypertrophy.

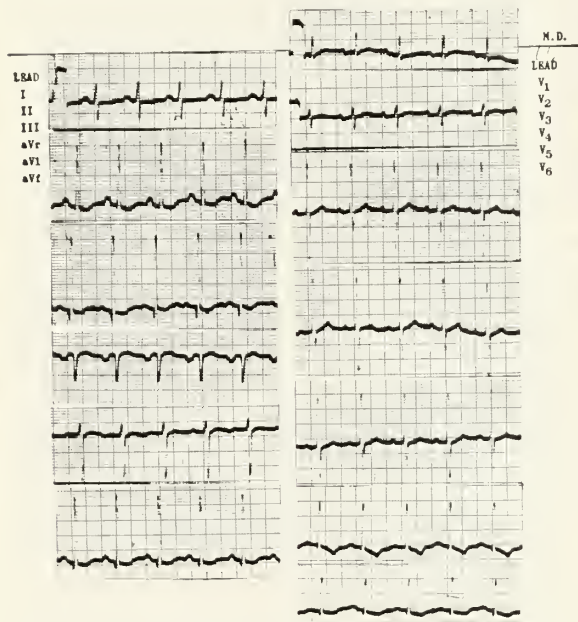


Figure 1. Electrocardiogram taken during the patient's ninth admission in 1961.

Dr. Delp: Mr. Druet, will you please discuss the x-rays?

X-ray

Dr. Druet: The first chest film was taken in 1957 and showed infiltrates in both apices and evidence of pleural thickening. There was enlargement of both right and left ventricles, enlargement of the pulmonary artery, and possible enlargement of the left atrium. There are no gas shadows in the upper right abdomen so it is consistent with hepatomegaly. There is no evidence of bone changes. The film taken in 1959 is essentially the same. The x-ray made in 1961 (*Figure 2*) shows a reactivation of the infiltrate bilaterally and the pleural thickening is somewhat increased. The heart is somewhat larger than in the other film. The lateral view shows mainly right ventricular hypertrophy, but there is also left



Figure 2. Chest x-ray made during the patient's ninth admission.

atrial enlargement which is minimal to moderate. The intravenous pyelogram shows some possible ischemia in the right kidney. There is no evidence of bone changes in any of the films.

Differential Diagnosis

Mr. Coppinger: The case for presentation today concerns a 24-year-old Negro woman who, over a 13 year period, had persistent, refractory, hemolytic anemia; changing cardiac murmurs; paroxysms of abdominal, chest, and bone pains; chronic progressive liver dysfunction; and sickling of erythrocytes. This is a case of sickle cell anemia, with diverse symptoms strongly suggestive of unrelated disease. At various times the patient presented with abdominal symptoms that were almost indistinguishable from an acute surgical emergency. At the time of her first admission the cardiovascular symptoms were strongly suggestive of congenital heart disease, but they later mimicked rheumatic heart disease. She developed liver dysfunction which at first appeared to be secondary to continued hemolysis of red cells, but hepatogranulomas were noted later. Any differential diagnosis of the pulmonary findings must include not only heart failure, but granulomatous pulmonary infections. Using the unitarian concept, I will attempt to explain the patient's signs and symptoms with one disease process. One of the dilemmas of this disease is evident when considering the abdominal symptoms found during the sickle cell crises. These may masquerade as a perforated viscus, acute

appendicitis, or cholecystitis. Even after the blood has been examined the diagnosis is a difficult one. Further confusing the picture is the association of cholelithiasis. Dr. Robert Jordan, in reporting 27 cases of sickle cell disease seen at KUMC, noted the presence of gallstones in ten.

The clinician's diagnostic acumen is further taxed in distinguishing between congenital heart disease, acute rheumatic fever, and rheumatic heart disease in patients who have sickle cell anemia. This is not surprising when one considers the hemodynamic and myocardial changes found in this disease and the resulting murmurs. A congenital lesion is excluded because of the lack of an early history of murmurs and because of the normal EKG on the first admission. Acute rheumatic fever was a feasible consideration when the patient was seen at this institution for the first time, but the presence of a normal EKG and the lack of arthritis militate against it. About 70 per cent of patients with sickle cell anemia present initially with heart murmurs. The cardiac diagnosis in a third of these patients has been rheumatic heart disease. A few of these patients have signs and symptoms suggestive of a congenital heart lesion. Both sickle cell anemia and rheumatic heart disease give migratory joint pains, cardiomegaly, exertional dyspnea, and prolongation of the P-R interval. Some distinguishing characteristics do, however, exist. The joint pains and the associated long bone pains of sickle cell anemia are not relieved by salicylates. The cardiomegaly of sickle cell anemia is usually of a globular configuration, but the mitral contour is not infrequent. A fluoroscopy with barium swallow usually does not show left auricular enlargement in patients with sickle cell disease. The association of rheumatic heart disease and sickle cell anemia is very remote, and a case of subacute bacterial endocarditis has never been recorded in a case of sickle cell anemia.

The liver presents an interesting problem of differential diagnosis. Early in the course of sickle cell anemia the high indirect bilirubin and the absence of bile in the urine suggests that the accompanying jaundice is secondary to increased red cell destruction. In some cases very striking elevations of serum bilirubin occur, and this is not necessarily related to a period of crisis. In these cases there is also a significantly high proportion of direct bilirubin. The strikingly high bilirubin value in these patients is associated with hepatic enlargement and cannot usually be attributed to increased red cell destruction, obstruction of the common duct or homologous serum hepatitis.

This patient's clinical course in reference to blood diseases essentially limits consideration to congenital anemias, namely the hemoglobinopathies. That it was

not simply a sickle cell trait is obvious. One of the less frequently seen hemoglobinopathies cannot be absolutely ruled out without hemoglobin electrophoresis. The patient's leukocytosis showed a shift to the left consistent with classical sickle cell disease. Granulomata are frequently found in debilitated patients, and such diseases as tuberculosis, sarcoidosis and syphilis must be mentioned. Sarcoidosis with its classical clinical course must be considered in our patient. The North American Negro is particularly susceptible to this disease. Syphilis is a granulomatous disease that is the great mimic. We dismiss it because of a negative serology and lack of a compatible history.

We were particularly intrigued with the possibility of tuberculosis in our patient. The sickle cell trait is twice as common in tuberculous patients as in normal individuals. The disease is frequently found in underdeveloped patients with anemia, bone pain and jaundice. Without a history of night sweats, with a negative sputum, and with a tuberculin test that was positive only with second strength, this diagnosis is unlikely.

Abnormalities of organ systems other than those shown in our patient may present as initial or important associated findings. In the genitourinary system spontaneous hematuria may occur in the absence of any of the usual causes. Hyposthenuria and ultimately uremia resulting in death have also been reported. Bone lesions, including osteosclerosis, osteoporosis, and aseptic necrosis of the femoral epiphyses have also been reported. Osteomyelitis due to *Salmonella* infection has been described in a number of cases of sickle cell anemia, and may be very difficult to recognize.

Neurological manifestations are also quite frequent in these patients. The symptoms include stupor and coma, hemiplegia, aphasia, convulsions, stiffness of the neck, nystagmus, cranial nerve palsies, and it is often difficult to distinguish the disease from acute poliomyelitis. Chronic leg ulcers over the internal or external malleoli are common in adolescent and adult patients with sickle cell anemia, and not infrequently constitute the presenting complaint.

Our patient's death is completely compatible with that most frequently seen in sickle cell anemia. Abdominal crises with ultimate development of hypotension and shock were reported in Herrick's first description of this disease, and appear to be responsible for our patient's death. Septicemia, fat emboli, or cerebral ischemia or infarction are all possible complications.

Dr. Delp: Thank you, Mr. Coppinger. There are a few signs and symptoms here I would like to have reemphasized. Mr. Haas, what about those murmurs?

Mr. Haas: I think the murmurs can be explained on the basis of changes in the hemodynamics as the anemia of the patient waxes and wanes.

Mr. Coppinger: Patients with severe anemia get a marked dilatation of the heart, and all of the murmurs can be explained by relative stenoses and relative insufficiencies.

Mr. Druet: I think that they are flow murmurs caused by the increased velocity of flow, but also it has been demonstrated that there are arteriovenous shunts in the lungs.

Dr. Delp: What about the leukocytosis that this patient had, Mr. Druet? Many times she had a white count as high as 35,000 to 40,000, rarely below 15,000.

Mr. Druet: I cannot explain the mechanism, but it is reported quite commonly.

Dr. Delp: What was the significance that you were going to attach to the sedimentation rate, Mr. Haas?

Mr. Haas: In sickle anemia, the red cells do not form true rouleaux. Therefore, the sedimentation rate is not increased. Also an increased sedimentation rate might make one think of active rheumatic heart disease.

Dr. Delp: I noticed in several of the accounts of this patient's physical examinations that the spleen was reported as being palpable. Any comments about this?

Mr. Stewart: Early in the disease the spleen is congested due to sickling in the spleen. Later, with infarction and fibrosis, the spleen contracts. I think we will find that this patient's spleen was extremely small.

Dr. Delp: Mr. Druet, this patient had an eosinophilia that was as high as 68 per cent at one time.

Mr. Druet: I would have to say that it is not known to be high in sickle cell anemia, and I cannot rationalize what this might be.

Mr. Haas: The possibility exists that, following the blood transfusion, she had an anaphylactoid pneumonia with eosinophilia.

Dr. Delp: Dr. Manning, what are your ideas about this patient?

Dr. Manning (internist): I saw this young lady for about four years consecutively, and I carried a running argument with one of the other doctors about whether she had rheumatic heart disease or whether the murmurs were functional. It was my feeling that she had rheumatic valvular heart disease. The major finding that I based this on was that I was convinced that I consistently heard an opening snap. I would also like to say something about her jaundice. Whenever the bilirubin reaches over 30 one should question the possibility of more than one etiologic factor. At the time of one of her admissions her

bilirubin was over 30, and I thought that she had a sickle cell hepatitis. This entity has been described. She did have gallstones as was later proved. One of the things that concerned us most towards the end of her life was the pulmonary infiltration. In about 1936 the first report of this particular type of complication of sickle cell disease was published. The patients had pulmonary vascular obstruction producing right heart failure, and the condition was referred to as a new cause of right heart failure. Only recently there appeared a description of patients with cor pulmonale, sickle cell disease, and pulmonary insufficiency. It is thought that these patients develop repeated small or large pulmonary infarctions which are due to the sickling and conglomeration of these cells in the small pulmonary vessels. The two things which seem to predispose to the sickling phenomenon are the percentage of sickle cell hemoglobin in a cell and the oxygen tension. The patient with sickle cell disease has between 80 and 100 per cent sickle cell hemoglobin. When such a patient develops pneumonia or any disease influencing alveolar-capillary oxygen exchange the oxygen saturation decrease in this area, and sickling is more prone to occur. That leads to capillary obstruction, more alveolar-capillary blockage is produced, and it is conceivable that a cyclic phenomenon would occur, eventually leading to chronic capillary obliteration, pulmonary fibrosis, pulmonary hypertension, cor pulmonale, and right heart failure.

We were also concerned that she might have tuberculosis because of the appearance of her chest x-rays. This is why she was started on isoniazid.

Dr. Delp: What are your thoughts, Dr. Larsen?

Dr. Larsen (internist): The tremendous degree of hemolysis that continually goes on in sickle cell disease is quite remarkable. The fact that the liver is able to compensate for this, and to clear it into the biliary systems without spilling over as urobilinogen in the urine attests to the functional capacity of the liver under tremendous loads. There are a couple of comments I would like to make concerning the question relating to the sedimentation. It would be extremely difficult to attach any significance to the sedimentation rate because there are two factors working against one another. First, the sickle cell would tend to inhibit the rouleaux formation and the sedimentation rate, but the anemia would tend to increase it. Concerning the leukocytosis and the thrombocytosis that accompanies this disease: during the process of sickling infarction, the spleen is quite vulnerable, and throughout the lifetime of the sickle cell disease there is repeated infarction of the spleen and consequently more and more fibrosis, until at autopsy the spleen is often an extremely small nubbin or in some cases has not been visible at all.

Dr. James Crockett (internist): As has been fully pointed out, anemia of severe degree can produce physical findings which mimic valvular heart disease, and I think that chart has several notes in it rather vigorously defending one position or the other. I can recall three or four of these arguments that have raged over the years about this particular patient. Patients who are severely anemic may have a markedly hyperdynamic state with a cardiac output recorded as high as 14 liters per minute. This is usually the case when the hemoglobin is less than 50 per cent of normal, and this patient certainly fulfilled that qualification. She had findings which really did suggest mitral stenosis without any question whatsoever. She had a very definite diastolic rumble, well heard at the apex, which clearly simulated mitral stenosis. She had an accentuated mitral first sound. She had an accentuated pulmonic second sound. Now, in addition to the murmurs which may be present in a hyperdynamic state, there may also be accentuation of heart sounds as we heard in this patient. So this alone is not of too much value. In addition to this we usually say that if the patient has an opening snap, it is probably organic mitral stenosis. If a patient has accentuation of P2, however, this may be heard along the left sternal border, and there really is very little difference in the timing between accentuated pulmonic second sounds and an opening snap. Probably the most pertinent factors tending to suggest that this was organic mitral stenosis was the abnormal P waves in the electrocardiogram, the evidence of right ventricular hypertrophy, and the chest x-ray which showed a prominence of the left atrium.

Pathology Report

Dr. Howard Fink (pathologist): The body was emaciated, measuring 62 inches in length and weighing 87 pounds. There was moderate jaundice. Evidence of previous ulceration of the legs in the form of pretibial scars was noted. The most striking, immediately apparent abnormality of the viscera was extreme atrophy and fibrosis of the spleen, which weighed only 3.5 grams, although maintaining approximately its normal shape (*Figure 3*). Microscopically its structure was greatly distorted; the capsule was thickened, wrinkled, and fibrosed; and the pulp in most areas was replaced by rounded and elongated masses of hyaline collagen (*Figure 4*). Most of these masses contained fair quantities of a powdery basophilic material which stained positively for both calcium and iron. The rounded hyaline scars probably represent organization of the perifollicular "intrapulp hemorrhages" which are characteristic of sickle-cell disease in its early stages, and I interpret the longer, curved, hyaline bodies as obliterated blood vessels. A few patent capillaries were seen in the



Figure 3. Spleen. Extreme atrophy and fibrosis.

less dense collagen between the hyaline bodies, as well as deposits of brown, refractile, iron-positive pigment which appeared crystalline and occurred in much larger particles than the hemosiderin usually seen in tissues. This fibrous obliteration of the spleen, which amounts practically to an autosplenectomy, and the histologic features just mentioned are highly characteristic of sickle cell disease in adults, and are seen in no other condition. A few small cellular areas in the spleen were identifiable as splenic pulp, and included a recognizable follicle or two. In some the sinusoids were distended by elongated red blood cells, many of which exhibited the characteristic sickle shape, with long, curved, spiky projections on one or both ends (*Figure 5*).

The lungs also were rather remarkable. They weighed half again as much as normal and had a firm, somewhat meaty consistency. Their cut surfaces were mottled with irregular gray and dark red patches of induration. The gray areas were more prominent in the upper lobes and along the pleural borders of the lower lobes, and contained visibly enlarged air spaces (*Figure 6*). On histologic examination the gray areas

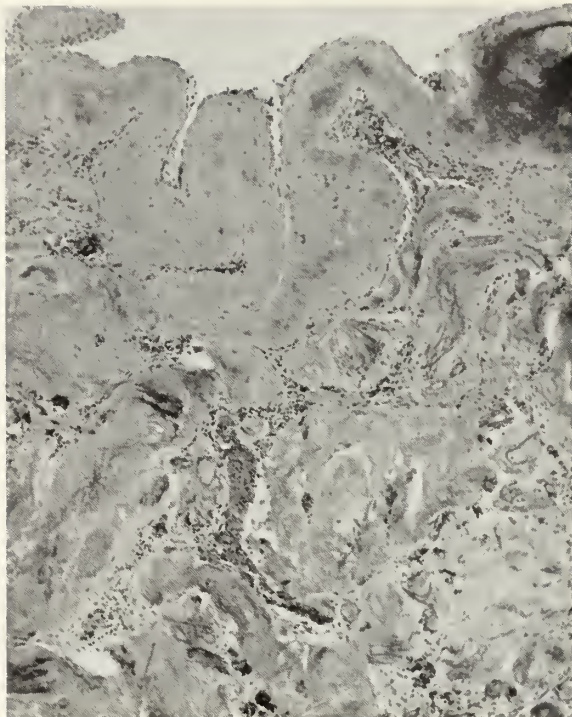


Figure 4. Photomicrograph of spleen. Thickening and wrinkling of capsule (top); replacement of pulp by hyaline masses containing mineral deposits. Hematoxylin and eosin, $\times 72$.

were seen to consist of fibrous tissue containing a few distended air spaces. In the areas of red induration the lung architecture was preserved, but the alveolar capillaries were jammed with sickled red cells. Many of the small pulmonary arteries showed pronounced fibrous intimal thickening; and the narrowed lumina of a considerable number of these sclerotic arteries were partially or completely occluded by packed masses of sickle cells. Although fibrin was scanty or absent in most such red cell masses, several of them were observed to be undergoing organization by fibroblastic invasion from the wall of the surrounding artery (Figure 7). Other small pulmonary arteries showed evidence not only of intimal sclerosis, but of previous thrombosis with subsequent organization and recanalization. I think it is probable that such thromboses were responsible for the multiple foci of fibrosis in these lungs, although many of these scars did not have the characteristic shape and peripheral location of healed infarcts. The presence of intimal thickening in many pulmonary arteries that were not obviously the seat of previous thrombosis suggests the possibility of systemic-to-pulmonary arterial shunts within the scars.

The liver was somewhat enlarged, weighing 2,050 gm. Its cut surface had an unusual mottled appear-

ance with dark brown irregular patches 4 or 5 mm. in diameter that alternated with similar sized paler areas. The cholecystectomy stump was well healed; the extrahepatic biliary passages appeared otherwise normal; and there was no evidence of stones. Microscopic sections of the liver showed fibrosis of a peculiar type, consisting of thickening and collagenization of the sinusoidal reticulum in focal areas having no constant relation to portal spaces or central veins (Figure 8). In many areas this fibrosis had occurred without loss of the basic sinusoidal architecture, but in some fields the liver cells were atrophic or completely replaced by the newly formed collagen. In some areas the sinusoids were distended by sickled erythrophagocytosis by Kupffer cells. Special stains demonstrated small quantities of iron in Kupffer cells and also in hepatic parenchymal cells, particularly about the portal spaces. In spite of the fibrosis, the general lobular architectural pattern was unaltered, and this fibrosing process certainly cannot be called a cirrhosis.

The kidneys were brownish, and the glomeruli

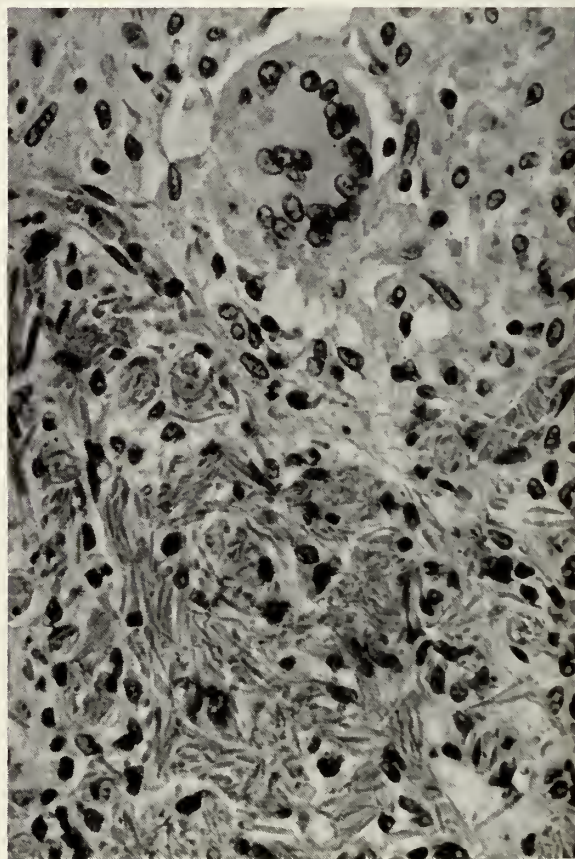


Figure 5. Higher power photomicrograph of spleen. Packed sickled erythrocytes in sinusoids below; miliary granuloma with multinucleated giant cell in upper one-third of picture. Hematoxylin and eosin, $\times 564$.



Figure 6. Lung: portion of upper lobe above, portion of lower lobe below. Irregular gray areas containing dilated air spaces.

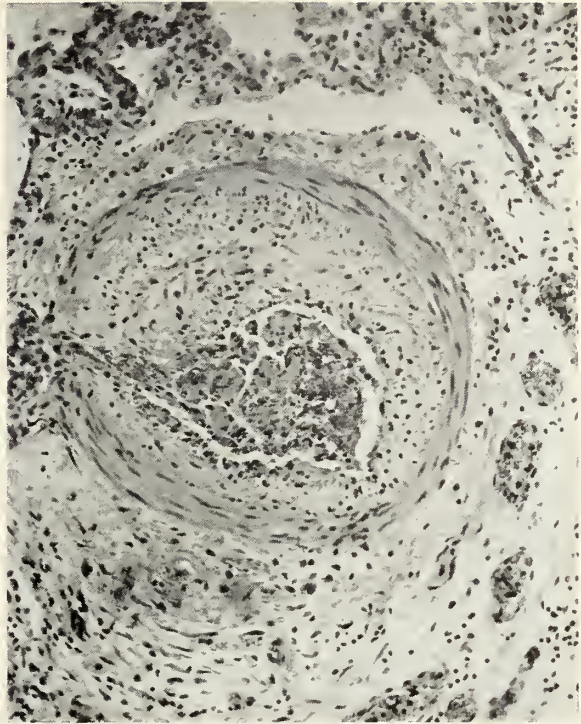


Figure 7. Photomicrograph of lung. Fibrous thickening of intima of small pulmonary artery; organizing thrombus in lumen. Hematoxylin and eosin, $\times 150$.

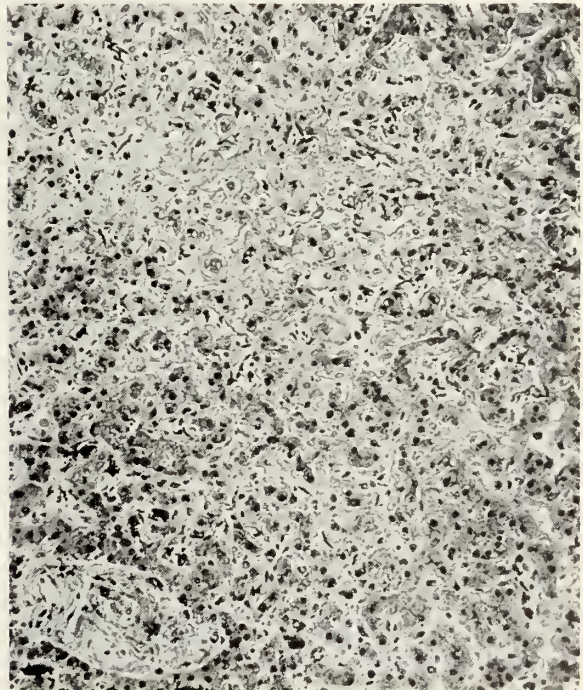


Figure 8. Photomicrograph of liver. Focus of fibrous replacement in upper one-half of picture; portal space in lower left corner. Masson connective-tissue stain, $\times 150$.

were visibly enlarged and bright red on gross examination. Enlargement and congestion of the glomeruli was also the most prominent histologic feature, practically all of the glomerular capillaries being greatly distended by sickled red blood cells. However, in spite of the focal fibrosis of lungs and liver in this case, and the patchy fibrosis of the renal medulla frequently observed in other cases of sickle-cell anemia, these kidneys were not at all scarred, except for a single patch of mild diffuse fibrosis in the medulla. Bile casts were observed in several tubules and the lining epithelium of many proximal convoluted tubules stained positively for iron.

The heart was definitely, though not markedly hypertrophied, weighing 390 gm. The hypertrophy involved principally the right ventricle and left atrium. The left ventricle appeared of normal size. The mitral valve was stenotic; its orifice measured about 2 cm. in diameter; the valve commissures were interadherent; and the leaflets were thickened, scarred, and deformed in a manner characteristic of healed

rheumatic valvulitis. Two minute fibrinous vegetations were attached to the anterior cusp near its distal edge. Microscopically, the valve tissue was densely fibrotic and contained small capillary channels. This vascularization constitutes confirmatory evidence of a previous attack of rheumatic valvulitis. The vegetations appeared as loosely adherent masses of homogeneous acidophilic material, and the underlying valve surface was eroded but not inflamed (*Figure 9*). No bacteria were evident. This lesion is a good example of so-called marantic or nonbacterial thrombotic endocardiosis, a degenerative phenomenon distinct from a true inflammation such as rheumatic or bacterial endocarditis. No evidence of arteriosclerosis was found in the coronary arteries. Focal fibrosis was, however, noted in histologic sections of the myocardium of both ventricles. Many of these minute scars were located immediately beneath the endocardium. I believe it is impossible to determine which, if any, of them were healed Aschoff nodules and which were the results of the same type of fibrosing process observed in lungs and liver.

The bone marrow was hyperplastic, but showed no diagnostic histological features except for the presence of moderate numbers of sickled erythrocytes, many of which had been phagocytosed by macrophages.

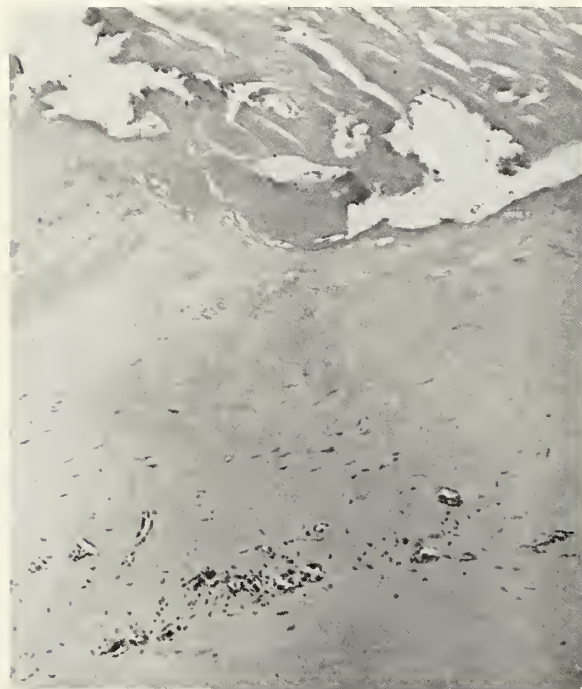


Figure 9. Photomicrograph of mitral valve. Dense fibrosis of valve; capillaries in valve substance below; fibrinous vegetation adherent to valve surface at top of picture. Hematoxylin and eosin, $\times 72$.

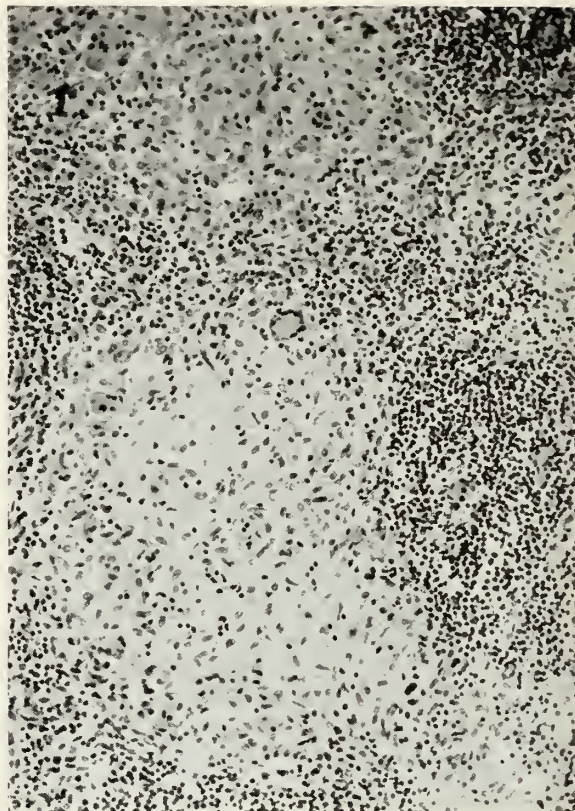


Figure 10. Photomicrograph of mesenteric lymph node. Miliary granulomas. Hematoxylin and eosin, $\times 150$.

The question of granulomatosis remains to be discussed. The lymph nodes of thorax and abdomen were grossly enlarged and softened, but they were not fused and contained no grossly visible granulomas. On microscopic examination, however, several tracheobronchial and mesenteric lymph nodes contained multiple discrete and confluent miliary granulomas which consisted of hyperplastic epithelioid cells and a few reticuloendothelial giant cells without evidence of necrosis (*Figure 10*). Other lymph nodes examined showed only diffuse nonspecific hyperplasia without granuloma formation. There was no evidence in any of the lymph nodes of extramedullary hematopoiesis. A few similar miliary granulomas were observed in the spleen (*Figure 5*) and bone marrow, but none were found in the lungs or liver, in spite of the previous diagnosis of multiple miliary granulomas of the liver made by biopsy 11 or 12 years before the patient's death. However, a small cluster of old fibrocalcific granulomas with caseous centers was discovered in the left lobe of the liver. No stainable acidfast bacilli or fungi could be found in any of the observed granulomas after prolonged and careful search. The granulomas in the liver were,

unfortunately, not cultured. The histologic appearance of the miliary granulomas is perfectly compatible with a diagnosis of sarcoidosis, but the presence of caseation in the granulomatous lesions in the liver is at variance with such a diagnosis. It is possible that the caseating and the hyperplastic granulomas are etiologically unrelated, and I really believe it is pointless to speculate further on the matter so long as we do not know whether sarcoidosis is a disease of specific etiology or merely a syndrome. At any rate the granulomatosis appears to be an incidental finding which played no part in the patient's death.

We may briefly summarize the autopsy findings as follows: although it is well known that the cardiac findings in sickle-cell anemia may closely mimic those of rheumatic heart disease, we have in this case a patient with sickle cell disease who actually did have rheumatic heart disease as well. The patient quite probably had pulmonary hypertension, partly as a result of her mitral stenosis, and perhaps partly due also to pulmonary fibrosis associated with multiple thrombi in small pulmonary arteries. Her death in a sickle cell crisis is reflected anatomically in the extreme capillary congestion in many organs by sickled

red blood cells, a lesion which probably represents a vicious cycle of capillary stasis and anoxia.

Dr. Delp: Thank you Dr. Fink. We have seen here the natural history almost complete over a period of eleven years of one illness and one disease entity, with so many characteristics as to almost make it classic. I think it is a distinctive sort of problem because of the remarkable degree of breakthrough that has occurred with this disease entity in the past ten or fifteen years.

Pathological Anatomical Diagnosis

Atrophy and fibrosis of spleen with calcification and hemosiderosis.

Focal congestion of lungs with masses of sickled cells in alveolar capillaries.

Focal interstitial fibrosis of lungs with emphysema.

Congestion of renal glomeruli with sickled red blood cells.

Mitral stenosis.

Acute passive congestion of liver.

Hydropicardium.

Nonbacterial verrucous endocardiosis of mitral valve.

SOMETHING "EVIL" ABOUT PROFITS?

Men of vision and courage in our industry have undertaken risks which more often resulted in failure than in success. The reasonable rewards which provide the incentive for this activity are profits. Without them our industry could not operate as it does. The perverted sense of values which has been forced upon us in recent years draws the broad implication that because our industry is commercial we should be suspect; the word profits has been portrayed as having an evil connotation; most recently we have been depicted as an industry willing, for profit, to foist "unsafe" drugs upon an unsuspecting public. Nothing could be farther from the truth. We progress commercially only as we progress scientifically and only because we understand and fulfill our moral obligations to the public we serve.—Francis C. Brown, President, Schering Corporation, to joint conference of the U. S. Food and Drug Administration and the Food Law Institute, Nov. 26, 1962.

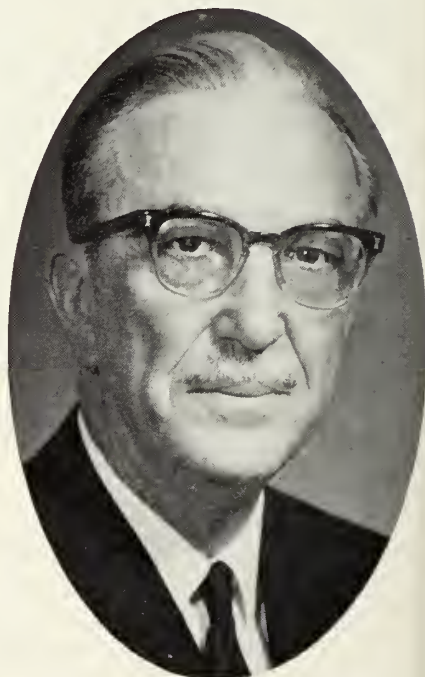
The President's Message

DEAR DOCTOR:

This quotation is from an article by Dr. Charles H. Bradford in the last May 23 issue of the *New England Journal of Medicine*, and had its origin from his father, Dr. Edward H. Bradford, formerly dean of the Harvard Medical School.

I obtained Dr. Bradford's permission to share these words with you:

"The Doctor must be broadly human. He deals with the vagaries of age and the fancies of youth; the sports of boys, and the appetites of men. In his profession, he tests the aviator, rations the soldier, estimates the endurance of the laborer, cares for the worried mother, and relieves the desk-ridden financier. His thought must reach to the ideals of the clergyman, and must interpret the flesh prompted dreams of the man of the world. And in this service, neither the precision of Science, nor the efficiency of business methods will suffice, for above all else, the practitioner must preserve and exercise the kindly indulgence of a considerate friend. In what academy can these lessons be taught?"



H. St. Clair O'Donnell M.D.

President



Nursing Services

The Committee on Allied Groups, of which Clarence H. Benage, M.D. of Pittsburg, is chairman, is currently planning an extensive project on the subject of nurses. To be most effective this Committee will require the advice and the cooperation of the medical profession. The Chairman will appreciate any comment concerning the objectives outlined by the AMA Committee on Nursing, which is the outline the Kansas Medical Society Committee on Allied Groups expects to follow.

The program of the AMA Committee on Nursing is based on three general assumptions: (1) that nurses have a separate and distinct professional status and their contributions are those of co-workers; (2) that nursing should expect the medical profession to support and endorse high standards of nursing education and service; and (3) that each of the various levels of academic and technical accomplishment in nursing makes its own unique contribution to the total health care of the public.

On the basis of these broad assumptions, the Committee has adopted the following objectives:

1. To expand and strengthen liaison activities between organizations representing the medical and nursing professions of the national, state, and local levels.

Liaison has been established with all the major nursing organizations (including the American Nurses' Association, the National League for Nursing, the National Federation of Licensed Practical Nurses, the National Association for Practical Nurse Education and Service, and others) as well as with constituent and component medical associations, medical specialty groups, and several national organizations with a collateral interest in nursing.

The Committee feels that one of its major contributions is to promote interprofessional conferences

between physicians and nurses. A committee composed of AMA and ANA representatives is now planning a conference on nurse-physician aspects of professional practice. The Committee on Nursing will also encourage the inclusion of nurses on programs of national and state medical meetings and attempt to remedy the scarcity of positively oriented, unbiased material on nursing in the medical literature.

2. To study and report to the medical profession on current practices and trends in nursing and on developments among nursing auxiliary personnel.

Through its headquarters staff, the Committee is collecting information on nursing matters vital to physicians. A file of abstracts, excerpts, and reprints is available for quick reference.

3. To stimulate, initiate, and, where feasible, support research in areas pertinent to the nurse-physician relationship in professional practice.

Such research requires the collaboration of many disciplines. Several nurse-physician teams are now engaged in extensive research projects. These include studies of interdisciplinary participation in planning care; the nursing needs of chronically ill ambulatory patients; and the amount and type of nursing service which makes the maximum contribution to maternal and infant welfare.

4. To offer advisory services to both professions on interprofessional matters.

The secretary and chairman of the Committee serve at present on the committee on careers of the National League for Nursing. The secretary is also a member of the advisory council of the National Federation of Licensed Practical Nurses, the National League for Nursing's committee to study costs of nursing education, and the hospital advisory council of the National Association for Practical Nurse Education and Service. The Committee will also serve

as a consultant group to committees, councils, and departments within the AMA. Similar services have been offered to constituent and component medical associations.

5. *To provide support and assistance to the nursing profession and its nonprofessional auxiliary personnel in their efforts to maintain high standards.*

Nursing, like medicine, is faced with pressing demands for change if high standards are to be maintained in our present environment of rapid scientific and social advances. Nursing is now engaged in a continuous reevaluation of its educational system, its scope of services, its legal responsibilities, and other phases of its practice which reflect in the quality of patient care. This Committee supports the efforts of the nursing profession in maintaining high standards and offers its cooperation and assistance.

6. *To encourage physicians to accept invitations to serve on nursing school faculties.*

In view of growing pressures on the professional nurse to assume responsibilities of a medical nature, the teaching role of the physician warrants reevaluation. At the present time, some nursing schools are finding it necessary to assign nurse faculty members to lecture on medical subjects.

If the medical and nursing professions are to make the fullest use of their joint potential, they must have not only a common denominator of interest in the patient and a comparable body of knowledge, but also the kind of relationship that derives from a deeper appreciation of, and respect for, each other as allies working toward the same goals.

ARTHUR A. KIRCHNER, M.D., *Chairman*

CHARLES L. LEEDHAM, M.D.

WILLIAM R. WILLARD, M.D.

CLARENCE H. BENAGE, M.D.

ELIAS S. FAISON, M.D.

BENSON W. HARER, M.D.

Committee Appointments

Dr. H. St. Clair O'Donnell, President, announces his committee appointments in this issue of the JOURNAL. The task of selecting chairmen and the membership of committees is always a difficult one. Dr. O'Donnell is pleased with the response he received from those he asked to serve the Society in committee work. It is anticipated this year will be one of exceptional committee activity.

The large membership on a number of the committees came as a result of a definite plan. It is hoped many of the committees will assign projects to subcommittees and thereby necessitate perhaps only one general committee meeting during the year. The chairman of each committee will welcome ideas or

suggestions for committee activity. It is hoped many members will assist their Society in this way.

The Society advances in direct relationship to committee activity. Rarely has the Society engaged in a program except where this has first been studied and recommended by a committee. It is most certainly true that the success of the year can be gauged by the productivity of the committees. With almost one-fourth of the total membership serving on committees this portends to be a year of greater than usual progress.

FOREIGN FELLOWSHIPS AWARDED

Thirty-one U. S. medical students have been awarded foreign fellowships which will enable them to obtain supervised medical experience in underdeveloped countries, the Association of American Medical Colleges has announced.

The fellowships are made possible by a \$60,000 grant from Smith Kline & French Laboratories, Philadelphia pharmaceutical firm. With the current selection, the Association during four years has awarded a total of 123 fellowships for study in 40 countries.

This year's winning students will work in Brazil, Guatemala, Nicaragua, Venezuela, Borneo, Cambodia, Nepal, The Philippines, Taiwan, Iran, Ethiopia, Kenya, Swaziland, and other countries in Southeast Asia and Africa. They will be stationed in mission hospitals and outpost medical facilities.

The primary objective of the fellowships is to provide students an opportunity to live and work in relatively primitive cultures which present challenging medical and social problems.

The students, selected by a committee of six U. S. medical educators, spend at least ten to twelve weeks with their foreign sponsors. The amount of each award varies, depending on individual requirements.

One of the SKF foreign fellows this year is Gary J. Myers, Fort Scott, a senior in the University of Kansas School of Medicine. Mr. Myers will be going to Venezuela.

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THE KANSAS MEDICAL SOCIETY
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Topeka, Kansas**



Blue Shield

1964 to Inaugurate New Method of Electing Blue Shield Board Members

Beginning in 1964, direct election of Blue Shield Board Members who represent Medical Councilor Districts will replace the present method of selection. Presently, and in the past, Board Representatives from each of the seventeen Councilor Districts have been elected by the Blue Shield Board upon nominations presented from the Blue Shield District Relations Committee of a given Councilor District. Individual Participating Physicians, while having the right to make recommendations to their District Relations Committee, have had no direct vote in the eventual selection of a representative.

Here is how the new system will work.

Nomination of at least two candidates will be made by the Blue Shield District Relations Committee from a given Councilor District. The nucleus of each of these committees consists of three physicians, including the chairman, who are appointed by the President of Kansas Medical Society. These three members will serve as a sub-committee of the District Relations Committee in charge of Blue Shield Board Representative nomination.

Prior to time for nominations, local medical societies will be informed by Blue Shield that an election is forthcoming in their Councilor District. This will provide Participating Physicians with the opportunity to express recommendations to members of the Blue Shield District Relations Committee prior to nominations.

After the District Relations Committee nominates candidates, ballots will be prepared for each district by Blue Shield. Write-in space will be provided on these ballots in addition to the names of at least two nominees.

Ballots will then be mailed to each Participating Physician within the Councilor District along with

the request that they be completed and returned within 21 days. After that time, returned ballots will be tabulated and results announced to local societies in each Councilor District in which elections were conducted.

Terms of Blue Shield Board Members are three years, and a member may serve two consecutive terms dependent upon re-election. Not all District Board Representatives' terms expire concurrently so that the new election procedure will not be operational in some districts in 1964. In some cases the new procedure will be deferred until 1965; in a few areas 1966 will mark the beginning of the process.

The significance of the new method may justify some further comment. The present Blue Shield Board is made up of thirty members, twenty-four of these being Kansas physicians and the balance composed of four Member Representatives as well as two gubernatorial appointees.

Of the twenty-four physician members, seventeen are representatives of Kansas Medical Society Councilor Districts. Thus, District Representatives compose the majority of the Board. The direct election of this group not only assures the individual Participating Physician of a representative local voice but also guarantees Participating Physicians collectively of a professionally oriented direction of Blue Shield policy. At the present time this is magnified by the fact that, of the seven remaining physician Trustees, five originally attained Board membership as District Representatives while the other two are the President and President-Elect of Kansas Medical Society.

The opportunity for individual physician participation in direction of, and identification with, Blue Shield promises to be strengthened by the new election method.



Personalities—IN KANSAS MEDICINE

Jack D. Walker, Pittsburg, has accepted an appointment to the full time faculty of the University of Kansas Medical Center. The appointment was effective the first of July.

Governor John Anderson has appointed **C. V. Black**, Pratt, coroner of Pratt County. Dr. Black has been acting coroner since the first of the year.

Raymond L. Pendleton, moved from Baldwin to Casa Grande, Arizona, where he began practice the middle of June.

New officers of the Kansas Heart Association were elected at the annual meeting held in Junction City in May. **Monti L. Belot**, Lawrence, was elected president and **Katherine Pennington**, Wichita, vice president. Among the new members of the board of directors are: **Emerson Yoder**, Denton; **Marvin Dunn**, Kansas City; **Major Swan**, Great Bend; **Robert Friggeri**, Girard; **D. C. Conard**, Dodge City; and **R. A. Dobratz**, Beloit. Drs. Belot and Pennington will also serve on the board. Dr. Marvin Dunn was the recipient of one of the largest research grants awarded by the Heart Association this year. The grant is to be used for research on heart and circulatory diseases.

Several Kansas physicians participated in the AMA's Political Action Committee meeting held in Chicago in May. They were, **Clair O'Donnell**, Ellsworth; **James McClure**, Topeka; **Norton L. Francis**, Wichita; and **Laurence S. Nelson, Sr.**, Salina.

Robert D. Boles, Dodge City, attended the annual meetings of the National Tuberculosis Association, the Conference of TB Workers, and the Ameri-

can Thoracic Society in Denver in May. Dr. Boles was a delegate to the meeting of the American Thoracic Society.

George D. Robinson, Wichita, was elected a Fellow to the American Academy of Pediatrics. The election to the academy was announced in May.

The first performance of a composition by **Robert E. Bolinger**, Kansas City, was recently presented at the Medical Arts Symphony in Kansas City.

Among the guest speakers at the Osawatomie State Hospital's Physicians' Day Conference in May were **Eugene Myers**, Iola and **Roy Menninger**, Topeka.

Thomas M. Cable, Leoti, attended the 35th annual convention of the Mid-West Hospital Association recently held in Kansas City.

Austin J. Adams, Wichita, was appointed to the Wichita-Sedgwick County Board of Health in March. Dr. Adams fills the vacancy created by the death of Dr. Fowler Poling.

Lawrence G. Heins, Abilene, has announced his retirement after more than 40 years of active medical practice in that community.

During March, **James J. Jambor**, Dodge City, spent a week in Minneapolis, Minnesota, where he conducted a series of lectures to the staff of the University of Minnesota's Department of Dermatology.

"Viruses and Cancer" was the subject of **A. M. Cherner's** talk before the Hays Rotary Club in May.

KANSAS STATE BOARD OF HEALTH

TOPEKA, KANSAS

Division of Preventable Diseases—Division of Vital Statistics—Kansas Morbidity Incidence

Summary of Cases Reported in March 1963 and 1962

And cumulative totals for the first three months of 1963 and 1962

Disease	March			January to March Inclusive		
	1963	1962	5-Year Median 1958-1962	1963	1962	5-Year Median 1958-1962
Amebiasis	2	2	5	24	9	10
Aseptic meningitis	—	—	*	—	4	*
Brucellosis	1	2	2	2	6	8
Cancer	316	270	441	887	883	1,111
Diphtheria	—	—	—	—	—	—
Encephalitis, infectious	1	—	2	2	4	4
Gonorrhea	227	167	167	700	540	540
Hepatitis, infectious	23	44	44	64	185	148
Meningitis, meningococcal	1	1	1	1	5	5
Pertussis	—	1	7	21	1	18
Poliomyelitis	—	—	—	—	—	—
Rheumatic fever	—	1	—	—	2	2
Salmonellosis	9	4	1	29	11	11
Scarlet fever	25	107	140	170	290	290
Shigellosis	4	—	1	13	3	7
Streptococcal infections	157	230	195	566	553	553
Syphilis	103	118	118	272	341	349
Tinea capitis	6	6	13	24	54	54
Tuberculosis	35	29	37	79	74	84
Tularemia	—	1	1	4	2	3
Typhoid fever	—	—	—	—	—	1

* Statistics on 5-Year Median not available

Misuse of Gamma Globulin In Measles Vaccination

With the release of measles vaccine, many physicians may wish to administer Measles Immune Globulin simultaneously with live measles vaccine in order to reduce the incidence of rash and fever. Physicians and health officers are cautioned not to use the state-supplied gamma globulin ("Immune Serum Globulin") for this purpose, and indeed, not to use ANY gamma globulin in conjunction with live measles vaccine unless it is clearly labelled "Measles Immune Globulin."

Only Measles Immune Globulin has been titrated and, if necessary, diluted to provide the optimum potency for use with the vaccine. The Immune Serum Globulin provided by the State Board of Health is, like many other preparations distributed under this designation, TOO POTENT for use with the vaccine. If so used, it may over-neutralize the vaccine and thereby nullify its effect.

Attention is also called to the recommended dose of Measles Immune Globulin, which is 0.01 cc (one hundredth of a cubic centimeter) per pound. Larger doses may nullify the effect of the vaccine.

Sabin Vaccine vs.

Live Measles Vaccine

The question has come up regarding the possible interference between *oral polio vaccine* and *live measles vaccine* where the two may be administered at approximately the same time. This applies particularly in an area where a Sabin program is being conducted and where at the same time private physicians may be administering live measles vaccine in their offices. The following recommendations have been received from the Division of Biologics Standards of the U. S. P. H. S., on this problem:

1. *Where oral polio vaccine has been administered*, the administration of live measles vaccine should be delayed until *four weeks* after the last type of Sabin has been given.

2. *If live measles vaccine has been administered*, oral polio vaccine should be delayed until the usual reactions to the live measles vaccine have subsided (usually no longer than 20 days).

Although there is no scientific data on actual interference between the two viruses involved, the

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Annual Meeting

Officers Elected for Society and Specialty Groups

The 104th annual meeting of the Kansas Medical Society was held at Marymount College, Salina, on April 29 through May 1. Approximately 350 members of the Society attended the meeting. Also registered for the session or affiliate meetings were 100 guests, 143 members of the Woman's Auxiliary to the Kansas Medical Society, and 125 members of the Kansas Medical Assistants Society.

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Neodesha; R. W. Myers, Newton; J. L. Perkins, Hutchinson; J. D. Rising, Kansas City; C. R. Rombold, Wichita; E. J. Ryan, Emporia; H. G. Whittington, Lawrence.

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J. N. Blank, Hutchinson; M. K. Borklund, Independence; J. F. Coyle, Coffeyville; J. L. Morgan, Emporia; G. P. Neighbor, Kansas City; L. E. Woodard, Wichita.

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B. M. Powell, II, Topeka, Chairman, 309 Medical Arts Bldg.—West; FL 4-9504.

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Carthy, Lawrence; W. A. Warren, Wichita; W. H. Zimmerman, Topeka.

STUDY OF HEART DISEASE

M. Snyder, Salina, Chairman, 105 S. 7th; TA 7-2222.

W. H. Algie, Kansas City; D. R. Bedford, Topeka; W. M. Campion, Liberal; E. W. Crow, Wichita; H. S. Dreher, Jr., Salina; M. I. Dunn, Kansas City; W. R. Durkee, Manhattan; C. W. Erickson, Pittsburg; H. A. Flanders, Hays; J. W. Graves, Wichita; C. T. Hagan, Wichita; D. Lukens, Hutchinson; P. W. Morgan, Emporia; L. E. Peckenschneider, Halstead; B. G. Smith, Arkansas City; H. B. Stryker, Jr., Concordia.

Morbidity Incidence Report

(Continued from page 331)

concern that brought about the above recommendations involves the fever reaction usually seen after administration of live measles vaccine. As with any vaccine, it is not desirable to have the presence of fever at the time of administration or during the period of antibody response. In case No. 1, above, a fever reaction to the live measles vaccine, if administered prior to the four-week interval following oral polio vaccine, would occur during the polio virus propagation period of four to six weeks.

Annual Meeting

(Continued from page 332)

Kansas Society of Anesthesiology

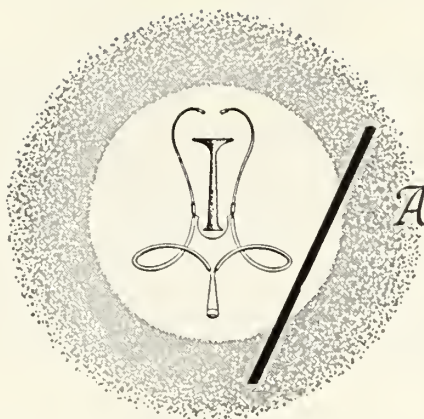
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Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the DOCTOR'S CALENDAR. Notice of the session is posted in advance to allow the physician time to make preparations.

AUGUST

- Aug. 4-9 International Conference and Exhibit on Aerospace Support, Washington, D. C. Contact: R. S. Gardner, Industry Div. Committee, 345 E. 47th St., New York, N. Y.
- Aug. 11-14 American Society for Pharmacology and Experimental Therapeutics, San Francisco. Contact: H. George Mandel, Geo. Washington University School of Medicine, Washington 5, D. C.
- Aug. 19-23 International Congress of Clinical Chemistry, Detroit. Contact: D. G. Remp, M.D., Henry Ford Hospital, Detroit, Mich.
- Aug. 20-26 International Congress of Psychology, Washington, D. C. Contact: Michael Amrine, 1333 16th St. NW, Washington 6, D. C.
- Aug. 25-26 American Congress of Physical Medicine and Rehabilitation, Dallas. Contact: Glenn Gullickson, Jr., M.D., 30 N. Michigan Ave., Chicago 2.

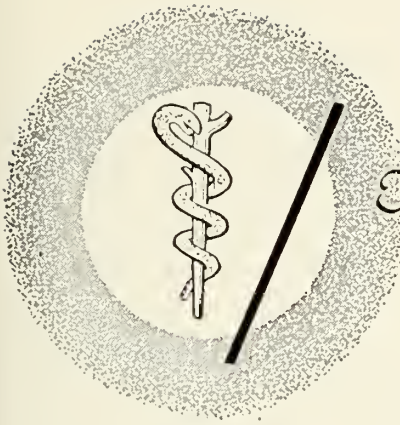
SEPTEMBER

- Sept. 5-7 American Association of Obstetricians and Gynecologists, Hot Springs, Va. Contact: Clayton T. Beecham, M.D., 3911 Vaux St., Philadelphia 29.

- Sept. 25-26 Congress on Occupational Health, San Francisco. Contact: AMA Council on Occupational Health, 535 N. Dearborn, Chicago 10.
- Sept. 26-28 American Association of Medical Clinics, Chicago. Contact: Robert S. Condie, M.D., 300 Homer Ave., Palo Alto, Calif.
- Sept. 27-Oct. 5 American Society of Clinical Pathologists, Chicago. Contact: Eleanor F. Larson, Exec. Sec., 445 Lake Shore Drive, Chicago 11.
- Sept. 30-Oct. 2 Kansas City Southwest Clinical Society, Kansas City, Mo. Contact: W. A. Slentz, M.D., 3036 Gilham Road, Kansas City 8, Mo.

POSTGRADUATE COURSES

- Aug. 5-9 *Clinical and Research Advances in Pediatrics and Child Guidance Problems*—Estes Park, Colorado. Contact: Office of Postgraduate Medical Education, University of Colorado School of Medicine, Denver 20.
- Oct. 14-18 *Recent Advances in the Diagnosis and Treatment of Diseases of the Heart and Lungs*—Washington, D. C. Contact: Murray Kornfeld, American College of Chest Physicians, 112 E. Chestnut St., Chicago 11.
- Oct. 21-25 *Clinical Cardiopulmonary Physiology*—Chicago. Contact: Murray Kornfeld, American College of Chest Physicians, 112 E. Chestnut St., Chicago 11.



The Kansas Press Looks at Medicine

Editor's Note. In this section the JOURNAL reproduces editorials relating to medicine which have appeared in the lay press. An effort is made to include both favorable and unfavorable comments, and the Editorial Board in no instance assumes responsibility for the opinions expressed.

DOCTORS' DILEMMA

As followers of "Dr. Kildare" are aware, the modern physician is faced with many a dilemma.

Daily, in his practice of the healing arts, he must make life-and-death decisions that involve imponderables. While the tremendous advances of science have provided him with far more knowledge and have reduced the areas of chance, some uncertainties remain.

In addition to these daily questions, there is another one that remains unresolved. It undoubtedly is being discussed at the annual meeting of the Kansas Medical Society in Salina this week. The question concerns the relationship between the profession and the state.

To a great extent, the physician and government are already in partnership. With few exceptions, the medical schools are operated on tax money or on private gifts made possible only because they are tax-sheltered. The standards by which physicians are licensed are set by law. The hospitals in which they practice are maintained in part by government funds, in part by tax-free gifts, and many are managed by institutions that have at least a quasi-public character. Research is similarly financed.

It should be remembered that these are partnerships of one kind or another, and in each instance the individual physician makes some contribution, often a large one. But the other partner is the public, often manifested by the government.

So to a considerable degree we already have a socialized health service. There are further examples but these are enough.

The rub comes when it is proposed this type of service be carried one step further so that the care and treatment of the individual patient also be paid for by the state.

To this most U. S. doctors object. They argue that in the practice of medicine the partnership becomes a relationship between the patient and the physician, a most personal relationship. The government is no longer a partner and should not intrude.

Medical care cannot be dispensed like stamps from a machine. It is basically an art in the profession of which both the patient and physician have personal decisions to make without third party interference.

This is true to a point. The point comes in the arrangements for the care of those patients on welfare, for public inoculations and other health measures, and now, under the new Kansas law, for those older persons who are on the border line of charity. In such instances, it seems generally agreed, the state has responsibility and continues its partnership.

The problem, then, is not whether medicine in the United States should be socialized but how far it should be socialized. This is the issue.—*Salina Journal*, April 30, 1963.

NEW MEMBERS

The JOURNAL takes this opportunity to welcome these new members into the Kansas Medical Society.

Donald H. Berkley, M.D.
Medical Arts Building
Ellinwood, Kansas

Courtney Clark, M.D.
4601 East Douglas
Wichita, Kansas

Peter Novotny, M.D.
The Menninger Foundation
Topeka, Kansas

John J. Schlueter, M.D.
3333 East Central
Wichita 8, Kansas

Phillip Woolcott, Jr., M.D.
The Menninger Clinic
Topeka, Kansas



Book REVIEWS

STRABISMUS—Symposium of New Orleans Academy of Ophthalmology, edited by George M. Haik, M.D. C. V. Mosby Co., St. Louis, 1962. 369 pages illus. \$18.00.

The New Orleans Academy of Ophthalmology sponsored a symposium on strabismus. They were fortunate in obtaining seven outstanding ophthalmologists to participate. This treatise is the compilation of the papers which were given by these men.

The first three chapters are devoted to the causes of misalignment of the eyes. These may be anatomical or innervational. The accommodative convergence/accommodation relationship is discussed at great length due to its major importance.

Eso and exo deviations are considered from both the standpoint of their causes and the method of handling. One of the most important points which are stressed is the fact that children should not be left to outgrow their deviated eyes, but should be treated as soon as the diagnosis can be made. One of the fresher and newer concepts is to operate the congenital esotropia at about the age of six months. In any case, whether it be by corrective lenses or surgery, ideally, these children should be straight if possible before school age. Congenital exotropia is very rare but should also be operated early.

A beautiful presentation of the anatomy of the ocular nuclei and all of their central and peripheral connections is made with numerous clear-cut illustrations. Some of the new methods of following these central connections are presented. Following this, the central neuroanatomy is related to strabismus and ocular motility. This is presented in such a concise manner that strabismus is more understandable.

The theories of the etiology of amblyopia are discussed and then amblyopia and strabismus are correlated. There is not total agreement on the localization of amblyopia, i.e., some believe that amblyopia is ocular while there is also definite evidence of organic central lesions causing the difficulty with the seeing mechanism.

A chapter is devoted to ocular nystagmus. The author analyzes the factors which make up the cycle

of labyrinthine nystagmus, then discussed the other types of nystagmus pointing out similarities and dissimilarities with labyrinthine nystagmus.

The remainder of the text concurs itself with the management of ocular deviations, both eso and exo. This includes the surgical approach as well as orthoptic training. These include both children and adults.

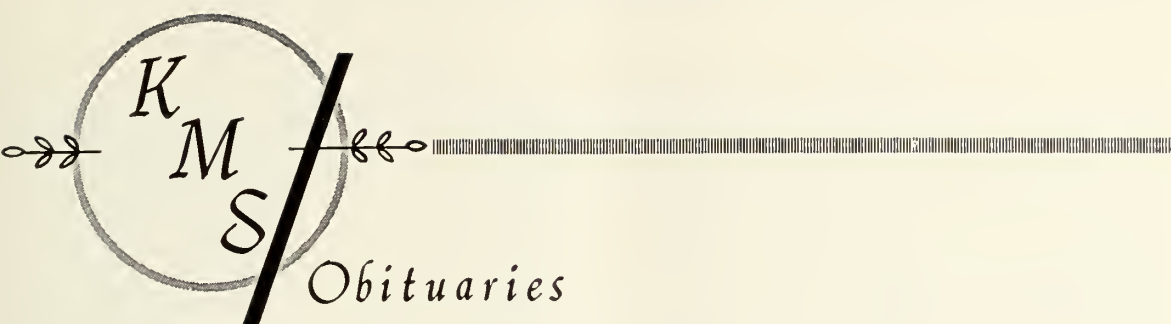
The final chapter of the book is the copy of the round table discussion held at the termination of the presentation of the papers. Questions such as you and I have in our daily practices were considered and the viewpoints and opinions of the outstanding speakers were given.

To make this publication more worthwhile, it is augmented by 202 illustrations.—R.R.P.

CLASSICS OF CARDIOLOGY, by Fredrick A. Willius and Thomas E. Keys. Published by Dover Publications, Inc., New York, New York, 1961. 2 Vol. \$2 each.

First printed in 1961, this is a two-volume, paperback edition of the book formerly titled *Cardiac Classics* when published by C. V. Mosby Co., in 1941. With each volume selling for \$2.00, it provides an inexpensive source of a great deal of interesting historical material. It consists of reprints of original investigations in the field of heart disease, and includes work associated with such well known names as William Harvey, William Withering, John Hunter, John Cheyne, William Stokes, Austin Flint, Sir James Mackenzie and Sir William Osler, and numerous others which are less familiar, but who have made epochal contributions to this facet of medical knowledge. The title pages of the original papers are reproduced, as are pictures of the authors, and many illustrations appearing in the original publications.

For anyone interested in the history of medicine, or anyone practicing cardiology who likes to know the source of commonly accepted knowledge of today, this offers an excellent source of interesting reading.—O.R.C.



JAMES T. NARAMORE, M.D.

James T. Naramore, 70, died May 12, 1963, at St. Joseph Memorial Hospital in Larned.

He was born June 1, 1892, at Blakely, Georgia. Dr. Naramore was graduated in 1918 from Emory University in that state and served as a medical officer during World War I.

Dr. Naramore came to Kansas in 1921 and began 40 years of service in mental hospitals of the state as a member of the staff of Parsons State Hospital. Later he became assistant superintendent at Parsons and superintendent in 1936. In 1945, he was appointed superintendent of Larned State Hospital, serving there until his retirement in April, 1961.

He was a member of the First Presbyterian Church and Rotary Club in Larned.

Survivors are his wife and one son.

FLOYD H. RUSH, M.D.

Floyd H. Rush, Pittsburg physician for more than 40 years, died May 4, 1963, at his home. He was sixty-nine years old.

Dr. Rush was born April 27, 1894, near Pittsburg. He attended schools in Pittsburg and was graduated from Rush Medical School in Chicago in 1921. He served his internship and residency at the Illinois Central Railroad Hospital in Chicago and returned to Pittsburg to establish his medical practice in 1922. Dr. Rush taught a course in obstetrics to the nurses in training at Mt. Carmel Hospital for many years.

He was a member of the First Methodist Church, Elks Lodge, and the American Legion.

His wife and three daughters survive him.

The Kansas Medical Society—1963-1964

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Pratt-Kingman.....	Vernon W. Filley, Pratt.....	F. Giles Freeman, Pratt
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Medical HISTORY

The Prairie Doctor

WILLIAM M. BREWER, M.D.,* Houston

Hays City

There were 22 saloons, three dance halls, one little grocery store and one clothing store. We do not think anything of having one or two dead men on the street nearly every morning. Some of them are soldiers from the fort. There is no law except the law of the six shooter.

Hays City, the product of a young railroad and an army fort, grew without form or care into a brawling frontier town. It was the wide-open, lawless home of gunmen, adventurers, and Indian fighters. It was, in two years, the resting place for three sheriffs, whose lives were snuffed out as a mock of justice. Not until a group, "The Citizens for Law and Order" and their spokesman, Cass Hawickholtz, finally hired a young Indian scout, William Hickock, did law and order come to Hays City.

It took four months for Wild Bill to cool most of the local hot heads in one fashion or another. One exception seemed to have diplomatic immunity. This character was Tom Custer, brother of General George Armstrong Custer, who billeted his Seventh Cavalry at Fort Hays. Tom repeatedly flouted the law until Hickock finally arrested and jailed him for riding a horse into Tommy Drumm's saloon. General Custer ordered Tom's release and found no sympathy in Wild Bill. Thus the Seventh Cavalry rode into Hays City to free Tom Custer, and under the cover of night Wild Bill rode out, wounded, but alive.

Another notable who found fame and fortune in Hays City was William Cody. West of Hays he established himself throughout the world as Buffalo Bill by shooting 69 buffalo in a contest with Bill

Comstock. He helped start Rome, a rival town across Big Creek from Hays City. Rome thrived, then overnight disappeared, lock, stock, and barrel. Its citizens moved to Hays City, because of a rumored flood, which was later traced to the sponsors of Hays City. Cody, a sportsman, took his loss and moved to Hays. There he became fast friends with William Hickock and succeeded in getting him his first position as a

In the following pages I will tell you something of early Western Kansas and one of her physicians. This is the story of a devoted doctor whose fame reached no further than his buggy would carry him.

lawman, the sheriff of Hays City. More men might have challenged the guns of the young and unknown Hickock but feared his friend Cody.

Not all the local gentry were ruffians. Victoria, a near-by English settlement, was populated by remittance nobility, who lived in fine style. They had the first herds of Aberdeen Angus seen in the United States. They brought their horses and hounds with which they chased the coyotes in the same manner as foxes were chased in merry old England. They also dammed Big Creek and rode in canal boats to and from fancy balls held at Fort Hays.

Although Hays City came into being in 1867, no church services were held in the city proper until 1873. That first service was presided over by the Reverend Leonard Bell, a Methodist. It was held on North Main in Tommy Drumm's saloon which was closed for the duration of the service, and the bar was covered with a sheet. Regular church services were not begun in Hays City for a few more years.

* This paper, written by Dr. William Mac Brewer when he was a senior medical student at the University of Kansas School of Medicine, received the 1963 Kansas Medical Society History of Medicine award. Dr. Brewer is now interning at Baylor University College of Medical Affiliated Hospitals, Houston, Texas.

Hays City was known far and wide, more for its vices than for its virtues. It is possible to see how the following statement originated.

There is no Sunday west of Kansas City, no law west of Abilene, and no God west of Hays City.

A Young Physician Comes West

The railroad, rapidly moving the frontier west, left Hays City to forge her existence from the surrounding loam. The gay and frivolous way of the English remittance men gave way to the conservative German Catholic farmers. Fox hunts, canal boats, and Aberdeen Angus disappeared and a cloistered society tilled the land. The land held its own through disease and drought, but Hays City needed a new breed to carry on. It needed doctors, lawyers, and teachers. It needed leaders and builders. Then Hays City would have a reason to grow.

The day was cold early in the year of '79 when a southern gentleman and George, his Negro man, stepped from the Kansas Pacific into the life of Hays. The silk topper, tailed coat, and Negro valet were foreign to Hays City, but the gentleman from Maryland became "prairie broke" the instant he set both feet on the cinders of that station platform. Just what they did that day is not recorded in history, but most likely it consisted of checking into the New York House or King Hotel after quenching their

thirst in Tommy Drumm's famous saloon. We can assume that shelter was soon provided and word of the doctor's presence in Hays City burned across the plains with the speed and impact of a prairie fire. Thus the doctor was not long being about his work. His obstetrical record reads as follows:

June 4, 1879—The first case of my own where I was all alone and responsible—I imagined that I would meet all the different complications—But everything passed off, All O.K. (Figure 1).

So busy was the 23-year-old doctor in those first days that he was a month meeting Yates, the town's other doctor. When they finally did meet, they became the fastest of friends. Yates, a huge man, had been graduated from Maryland two years ahead of Doctor Middlekauff, and the two loved to recollect about their old professors: Chisom, Chew, and Miles. Yates did not remain in Hays, but while he did the two doctors shared an office.

One of the responsibilities that fell on the doctors by default in those days was pulling teeth. The duty, though dearly hated, was often required. Such was the occasion one day when both "Doc" and Yates were in the office. A cowboy at the end of a cattle drive was sporting a toothache that could not be successfully cured in Tommy Drumm's saloon, and he was brought to the office by his buddies. "Doc," not wanting to pull the tooth, quickly busied himself

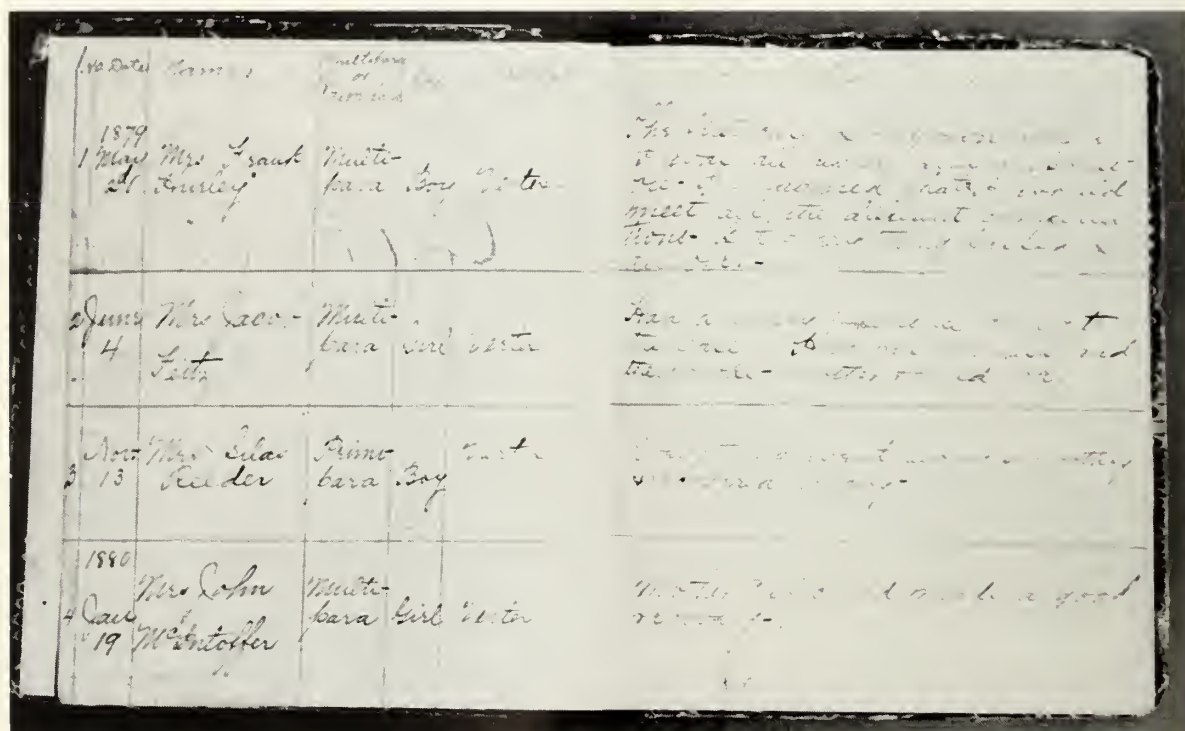


Figure 1. Doctor Middlekauff's Obstetrical Record Book showing his first case.

with another patient, leaving the tooth to his partner. Yates sized up the situation and felt he had better remove the tooth while the man's self-induced analgesia lingered. Therefore, he sat the inebriated cowboy on a stool and taking the tooth extractor in hand, opened the patient's mouth to remove the tooth. The drunken cowboy mistakenly thought Yates had hit him and reflexly drew back smashing Yates in the face. Staggering back with blood streaming from his nose, Yates managed to maintain his balance but not his composure and returned the blow. This anesthetized the cowboy, loosened the tooth, and stretched him on the floor where Yates sitting astraddle of him removed the tooth. "Doc" said that Yates earned the whole 50 cents office call and he would not ask for his half.

"Doc" and Yates had many adventures and schemes together. One was homesteading a quarter section of land south of Hays City, which they religiously camped on one night each month, year around to fulfill the legal requirement.

Though this was great fun for the doctors, it was cold and foreign to George, the Negro valet. Finally after six months George could no longer resist the temptation, and with "Doc's" beaver hat, tailed coat, striped trousers, and loose change, he took "French leave" for Maryland. That night "Doc" missed George and other things, and in anger he wired the Kansas City Police to apprehend George. When they did, "Doc" repented and sent money to take George to Hagerstown, Maryland, first class. George told the Middlekauff family in Hagerstown, "I wuz sorry to up and leave Doctor Joseph, but Hays, Kansas, hain't no place no how fur a cullud' gentleman."

The Making of a Doctor

Great, Great, Grandfather Peter Middlekauff sailed from Rotterdam, Holland by Deal, Kent County, England on the ship Montonhouse and arrived in the city of Philadelphia, Pennsylvania, August 24, 1728.

There he swore allegiance to the King of England, settled for a short while in Lancaster County, and then moved to the vicinity of Frederick, Maryland. Endowed with a quick mind and a strong back, this Dutchman prospered, accumulating considerable property. To his son, John, he deeded "Wells Forest," a 100 acre tract of land for five shillings.

With the 'fore mentioned land, Great Grandfather John Middlekauff became a successful land broker and at his death left the family of seven sons considerable fortunes.

Grandfather Daniel Middlekauff, the youngest of the seven sons, was born during the Revolutionary War and continued to live on the family holdings near Hagerstown, Maryland. There he reared a family

of six sons and five daughters, the youngest of whom was Joseph Middlekauff, the father of Joseph Henry Middlekauff, the subject of this paper.

July 30, 1857, Mary Elizabeth Middlekauff bore Joseph Henry, the second of her ten children. During that same year on an undetermined date, George, a Negro baby, was born to Mammy Brooks, the Middlekauff's unmarried household servant. As was Brooks' custom, she would present her child, which she unfailingly conceived at a camp meeting each year, to one of the master's children. Thus Joseph and George grew up as companions; Joseph, a gentleman and George, a gentleman's man. Mammy Brooks took care of the two until they were nearly men and schooled them in human understanding and the social graces.

In 1861 the Civil War disrupted the quiet life of this Dutch community in northern Maryland. Although they were allied with the North, they had slaves and many sympathies with the South. So it is ironically fitting that this calm agricultural scene became the turning point of the war. September 17, 1862, General McClellan with superior forces met Robert E. Lee by surprise at Antietam Creek on the Middlekauff farm and although the battle was undecided, Lee retreated and the victory was given to the Union. It was this battle and first victory for the North that allowed Lincoln to issue his Emancipation Proclamation and later to end both the war and slavery.

The end of slavery did not end the smaller plantation system of the North but severely weakened it. This was recognized by the Middlekauff family, and the plantation was forfeited in favor of other investments to cover a bad note of one of the brothers. This proved to be a wise decision, and each of the ten children was giving \$15,000 to start his fortunes.

Feeling he could best invest his fortune in his education, Joseph Henry at age 17 took George, his man servant, and enrolled in Mercersburg College. There they lived in bachelor quarters for one year and then in 1874 moved to Gettysburg, Pennsylvania, and enrolled in the College of Pennsylvania. At Gettysburg Joseph excelled socially, academically, and athletically. He joined Phi Gamma Delta Fraternity, established the highest recorded marks in Greek and Latin, and played on the varsity baseball squad. He remained at Gettysburg for two years and at age 20, though not a graduate, entered the University of Maryland School of Medicine in Baltimore.

The University of Maryland and its record of medical excellence long preceded Joseph. It was known for Marquis de Lafayette, Dr. Ephraim McDowell, and for being the first or second school in the nation to make human dissection compulsory. Public sentiment was so prejudiced against human dissection that

mob violence was often experienced. The windows in the second floor room where Joseph did his dissection were mere slits, four feet high and four inches wide. Not long before Joseph's schooling, armed lookouts were posted during class, and often the besieged instructor and students only escaped mobs by the concealed spiral staircase in the corner of the building.

Medical training in 1877 took two years, a basic science year and a clinical science year. Joseph Henry Middlekauff's class cards showed that he enrolled and was examined in the following:

Anatomy—Francis T. Miles M.D., Professor
 Practical Anatomy—J. Edwin Michael M.D., Demonstrator
 Physiology, Hygiene and Disease of Throat and Chest—F. Donaldson M.D.
 Lectures on Practice of Medicine at Medical College, Clinical Lectures University Hospital—Professor Richard McSherry M.D.
 Chemistry and Pharmacy—William E. A. Atkins M.D., Professor
 Diseases of Women and Children—W. T. Howard M.D.
 Obstetrics—G. W. Miltenberger M.D.
 Surgery—Christopher Johnson M.D., Professor
 Operative Surgery—L. McLane Tiffany M.D., Professor
 Materia Medica and Therapeutics—Samuel C. Chew M.D.
 Principles and Practice of Medicine and Clinical Medicine—Richard McSherry M.D., Professor
 Ear and Eye Surgery—Julian J. Chisolm M.D., Professor

Following graduation, or shortly before graduation, Doctor Middlekauff spent his preceptorship with Doctor C. B. Boyle in Hagerstown, Maryland.

Bachelor Days

Hays City quickly prospered and grew with the vitality of its professional class. The lagging economy picked up, bills were paid, and many new and permanent buildings, such as the Krueger Brothers, were established. Specialization and division of labor started to take their places in an unspecialized society. Men rented rigs and horses from Harry Felton rather than keeping their own. They sold their wheat to I. M. Yost at the mill and bought their flour from the grocers. They called for a doctor's assistance and bought their prescriptions at King Brothers' or Snyder's Apothecary, giving up midwives and home remedies. Hays City was not a lone and dying town the railroad had left behind but was a vital center for the surrounding area.

That first 4th of July in 1879, Doctor Middlekauff had the pleasure to attend the ceremonies at Fort Hays, and Josephine Hawickholz, a young lady at that time, recalls this story about him (*Figure 2*).



Figure 2. Mrs. Josephine Hawickholtz Middlekauff came to Hays City in 1867 on one of the first trains west. Her parents brought her west on the advice of doctors, who said the climate would be more comfortable for her ill health. She was expected to live only a few more years. Now at age one hundred one, Mrs. Middlekauff is able to recall almost a century's history and relate it in such a fashion that takes the listener back into history as if it were yesterday.

This paper is dedicated to Mrs. J. H. Middlekauff who not only made its preparation possible but also made it so enjoyable to write. (Photograph by Hays News)

"I was 18 and pretty excited about being home from Leavenworth where I had been attending school. A group of us had gone to the fort to take in the festivities, and in my excitement I got lost from them early in the day. As the last parade was over and the band was through playing, I started searching for the group I had ridden out with. Just in the nick of time I reached the buggy and found Charlie Reeder talking with a handsome gentleman whom I immediately recognized to be the young Doctor Middlekauff. Charlie and his girl were ready to leave, and as I approached the buggy, he called out, 'Here Doc!' You see they weren't very formal in those days."

"'You just take Josey home. This buggy is too small for two, much less three.'"

"Well, I was quite embarrassed and told him how

sorry I was that he got stuck with me. You see, he was quite a favorite of many of the daughters and their mothers in Hays City."

"'Well,'" he said to me, "'Miss Hawickholz, to show you how badly I feel, I would like to take you home the long way. I know you have been away at school a long time, and the wheat fields we have here might look good to you, so we will drive around that way.' And that is just what we did."

Hays had few entertainments other than dance halls and saloons, leaving the less rough and ready citizens at a loss when it came to spending spare time. It was this necessity that led to the founding of the Mystics Club, a theatrical group in Hays. This aggregation of thespians came from the well-bred eastern women at the fort, the remaining English remittance nobility in Victoria, and the well-educated citizens in Hays. Conn Henley directed all of the plays, and Doctor Middlekauff was in every play if his medical practice permitted. They thought themselves quite good and acted many nights in Hays City and surrounding communities. One such incident was recorded in Doctor Middlekauff's Obstetrical Record.

January 25, 1884, I gave a large dose of Fluid Extract of Ergot to hasten labor, will never do so again, the pains were something awful and labor severe, but I had to go to Ellis to play my part in the Mystic Club. All O.K.

In early days in Western Kansas there were no highways or marked roads but only a maze of trails and paths landmarked sparsely by farms, trees, gates, and creeks. Therefore when traveling from town to town, one had to inquire about the most frequented route to be assured of reaching one's destination. Such was the case when Otto Schwaller and Doctor Middlekauff set out one evening for Ellis, Kansas, with Josey Hawickholz and Otto's girl. At the livery stable Harry Felton gave them the new and shorter route, telling them to turn west at the second gate north of Hays City. Doctor's team was last to be hitched and it was nearly dark when he and Josey drove north from Hays. Carriage lights flickering, and miles behind Otto Schwaller, the doctor and his girl lost track of paths and gates in the joys of the fresh breeze and sparkling heavens.

Josey recalls, "The first thing we knew, the team ran against a wire fence, threw itself back, and nearly crushed us in the buggy. Well, naturally it scared him and frightened me half to death. After we knew we were not hurt, Doctor was anxious to see how badly cut that team was. He got off the buggy and examined the harness which was, of course, all torn apart. But fortunately one of the horses was barely scratched and the other didn't even have the hair

parted. When he sat down in the buggy again, he put his arm around me, kissed me, and said, 'Does that feel any better, Josey?' "

"Oh yes!" I said, "but I was taught that sort of thing to be naughty."

"'Well now,' he said, 'that's all right, because down South when a gentleman is out with a girl and he sees a meteor or a falling star, it is his privilege to kiss her without it meaning any offense or needing an excuse.' "

"I looked at him like a silly fool and said, 'Just so you don't expect me to count all those meteors!' "

The young men of Hays City also found other acceptable means of entertaining their lady friends. Ice skating, bobsledding, and buggy riding were always popular, but by far the most outstanding entertainment in Doctor Middlekauff's group was the "Surprise Party."

The Modus Operandi was, The young men met and planned the Surprise Party; the girls filled baskets with good things to eat and the crowd descended unannounced on the poor unfortunate victims, sometimes getting them out of bed and taking possession of the house, danced until morning. Uncle Jack Downing was a favorite victim for he wielded a mighty sassy fiddle bow in those days.

Soon after George returned to Hagerstown, Maryland, the Middlekauff family started wondering about this land, Kansas. George spoke very poorly of it, while Doctor Middlekauff wrote only glowing accounts. To settle this unrest in their minds, the parents decided to move to Kansas for an extended visit. Unluckily they reached and left Hays during years of crop failure and obtained an opinion much in harmony with George's. They told their son when they left, "We would rather die young with tuberculosis in Maryland, than of old age in this God-forsaken land." And that is just what they did.

Bachelor days were fun and exciting for Doctor Middlekauff but not completely satisfying. He loved his work but needed something more. One terribly hot August afternoon in 1883, he took Josey Hawickholz to the Phillip ranch on a call to see a sick child. The ranch was near Victoria, just the right distance for a buggy ride. Josey was happy to accept the invitation for a cooling ride with the man she loved.

"It was on that trip," recalls Josey, "that we decided we might get along and should be married. You might say we eloped. We decided we might as well be married that day as any. We were married at the fort by the chaplain and kept the secret for two weeks before anyone knew."

Thus ended Doctor Middlekauff's bachelor days.

Early Medicine in Western Kansas

In the latter part of the 1800's medical practice in western Kansas was still shrouded in mysticism, but it was making strides toward scientific thinking and into an era of "Imperial Medicine." Doctors often seemed sorcerers rather than scientists because of the necessity of treatment where no established therapy was available. Medications were often therapeutically inert and only God-given resistance saved the patients' lives. While much was to be desired in the understanding of medicine, "The Art of Medicine" flourished. This style of conscientious, individual attention a physician had for each of his patients developed a feeling of security and respect for the medical profession that still lingers today (Figure 3).

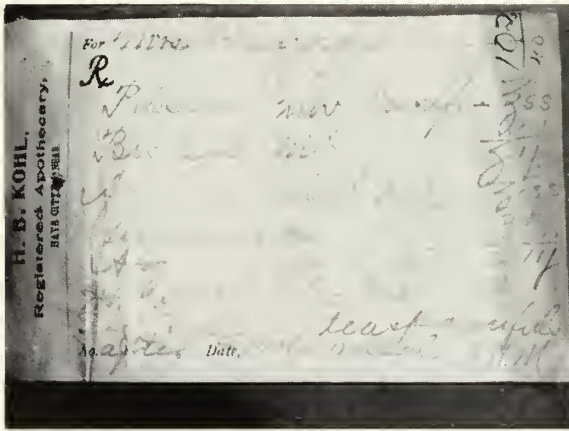


Figure 3. One of many prescriptions Doctor Middlekauff wrote at H. B. Kohl Apothecary.

Doctor Middlekauff was a typical horse and buggy doctor. He and his horse, Charlie, were reputed to know every tree, fence, and gate post in Ellis County. His calls took him out of Hays for a radius of more than twelve miles. Often he drove as far north as the Saline River, as far south as the Smokey River, east to Victoria and Walker, and west to Ellis. Weather was never a factor when he started out on a call but often determined how soon he arrived.

A young German girl, an obstetrical patient of Doctor Middlekauff's, correctly predicted the end of her confinement twice in succession. He thought this was interesting but no more than a coincidence because she had not called him, and it was the very night she had predicted the termination of her third confinement. He went to bed, and no sooner had his second slipper hit the floor when a call came for his services. His patient was on schedule.

When he called the Felton Livery Stable to request that a rig and driver be sent to his house, he got this reply,

"Doc, have you looked at the weather? I don't have a driver who would brave it to drive from here to your house, much less, one that would drive you out in the country in this blizzard!"

Doctor Middlekauff answered by saying, "I'll bring my tools and walk to the livery. You have a rig ready to go."

Harry Felton, still trying to keep the doctor from making this perilous journey, continued to argue. "If something happens to you, who is going to pay for my rig and horses?"

"Now listen, Harry," said Doc. "You know I'm good for a team and rig, and if I'm not here Josey will pay my bills. Now can you deny me a rig to help this girl? I've delivered two children for your wife, and you know what torture they go through."

He waited no longer for discussion, took his obstetrical tools in hand, and walked to the livery stable determined to make the call if he had to lead the horse. The rig and horses were ready, two hot soap stones were on the floor, heaps of buffalo robes were on the seat, and a shovel was in the back. But there was no driver. It was sad to see Doc climb in the rig alone, deserted when the going got tough.

"Wait Doc!" said his usual driver. "Let me get my coat. I've driven you in fair weather, and I'll be damned if I can let you go alone now."

All night, until ten o'clock the next morning, the two men alternately drove and shoveled, finally reaching the farm south of Hays City. The principle of the mission was accomplished. The mother and the child were doing well. She had delivered by herself on schedule the night before.

Charges for obstetrical care were as follows: normal birth, \$16.50; artificial labor, \$25; and placenta previa, \$35. This included pre and post partum visits and the cost of the rig and driver at the time of delivery.

Doctor Middlekauff started using forceps and chloroform in 1882. In 1884 he used fluid extract of ergot, which has been mentioned previously, but later used it more conservatively. Staying abreast of the literature by reading the *Journal of the American Medical Association* and other publications, Doctor Middlekauff later changed from ergot and chloroform to pituitrin and ether.

The doctor's son, Jack, who often drove for his father, recalls this story. "When it was a long case, Dad would have the farmer find me a place to sleep. Then waking me in the morning, he would kick up the stove and fry bacon and eggs for the whole household before we would return home. On one occasion there was no basin for washing the baby, and he used the frying pan instead. We skipped breakfast that morning."

Doctor Middlekauff placed women on a pedestal

and always attributed their fall to the scheming of unscrupulous men. He felt women could do no wrong and staunchly defended that point. Once called to treat the stomach-ache of the daughter of a German farmer, Doctor Middlekauff found the unmarried girl to be in labor with a pregnancy unknown to her parents. Following the delivery he settled the raging father with the following statement: "What has happened here is not the fault of your daughter but the fault of some man. I will expect you to treat her well, and if I hear otherwise, pray God help you."

Many more incidents can be told concerning his obstetrical experiences, but they are best summarized by saying that during his lifetime, Doctor Middlekauff delivered 2,000 babies, 20 of whom were delivered in a hospital.

"Conditions and assistants for surgery were always poor," remembers Charlie King. "My brother Harry was both a druggist and a surgical assistant, and Doc taught him all he knew. When we operated we often had to improvise tools from available material. I can remember a number of leg amputations that were done with the saw from the butcher shop and the horseshoe rasps from George Philip's Hardware to smooth the ends of the bones. Now and then we had to operate at night, and one man would have to hold the light. Often the operation would have to recess while the light holder stepped out in the street to get air and clear his faintness. We used carbolic acid to sterilize the tools and did all right on arms and legs but never touched the belly. If peritonitis was present, Doc just sent for the preacher."

Probably unknown to the present-day generation, hackberries are edible and in past generations were eaten with the same relish as sunflower seeds are eaten today. But yesterday, the same as today, they were the forbidden fruit during school. Walter Binder and a friend thought they had solved the problem of disposing of the seeds, which in the past exposed such orgies; filling their pockets with hackberries, they proceeded to eat to their hearts' content. Their method was to swallow the seed, which was nine-tenths the volume of the berry or about the size of a 0-0 buckshot. The third day of their intemperance revealed the fallacy in their logic, and severe stomach cramps required Doctor Middlekauff's services. The diagnosis was easily made but the remedy was not so rapid. For nearly an hour Walter leaned forward grasping his ankles while Doctor Middlekauff gently broke up the mass of hackberry seeds lodged in his rectum. Finally like the shot of a gun, the impaction exploded peppering the cat and Walter's laughing brothers with seeds. Only quick reflexes saved Doctor Middlekauff.

Diphtheria and other unknown diseases laid waste to the population. After a baby lived past the second

summer, he was almost out of danger; however, he was in the minority because 60 per cent of all children died during the first two years. Doris, Doctor Middlekauff's daughter, was the first person in Ellis County to be inoculated for diphtheria.

Doctor Middlekauff tried to be fair about his charges and always said people of Ellis County set standards for honesty. When the wheat was brought yearly to the mill to be sold, the farmers would always come to the doctor's office after the second load and settle their accounts. When crops were bad, it was a hard year for everyone including the Middlekauff family. To illustrate the honesty of the people, Doctor used to tell this story.

"Once a man from down around the Smokey Hill River came to me with a problem that I could only solve with a very vile tasting medicine. To make it more palatable I placed it in gelatin capsules and sent him home. The next July when he stopped by to pay his bill, he produced a small box and within were my empty capsules."

A Family Man

The first child came to Josey and Doctor in 1887, three years after their marriage. Josey did well, but with the luck of a doctor's wife she went into labor when Doctor Middlekauff was the only physician in town.

March 2, 1887, Mrs. J. H. Middlekauff, "My Wife" In labor all day and evening. Had to use chloroform & instruments. There was no other doctor in Hays who could and that my wife would trust so I had to use them myself—child large, 11 lbs. Both O.K. (Figure 4).

In little more than a decade Doctor Middlekauff turned the chance delivery of his wife into a tradition, and in addition to Major he brought Edith, Jack, and Doris into the world.

Doctor dearly loved his children but varied the

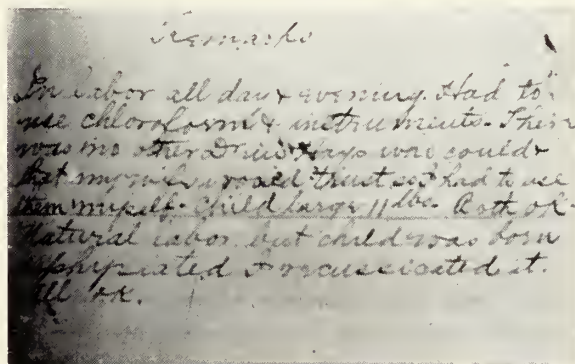


Figure 4. Doctor Middlekauff's Obstetrical Record Book describing the birth of his first son.

manner in which he reared them. As soon as the boys were old enough to take some responsibility, he gave it to them. About the same time he gave them his philosophy for their deportment.

"Boys" he said, "I want you to have fun while you grow up, but remember this is a small town and don't do anything that would embarrass your mother. If you have any problems, I am the only person to come to; between the two of us we can always work them out."

The following story exemplifies Doctor Middlekauff's understanding way. As the son tells it, he and some of his friends had procured a bottle of spirits from the unlocked cabinet of one of their fathers and set about enjoying the lesson it might teach them. Unluckily, one boy's father found out about the spree and went to Doctor Middlekauff's office to straighten out the matter. While this man was in the back office violently expounding about how Doctor Middlekauff's boy was corrupting the youth of Hays City, Doctor Middlekauff's son quietly walked in the front door and also quietly left after realizing the situation. He stayed away from home until just before supper, not wanting to face the music. When he arrived home, his father greeted him warmly and putting his arm around him said, "I hear the nicest things about you from so many people each day, and I just want you to know how proud I am." His son never forgot that lesson.

Although Doctor Middlekauff's era was before talkie movies, he never missed the change of a silent movie and took the family to each one coming to Hays City. He loved sports, especially football, a sport in which he had never participated, and would always say to his boys when they returned from a football game, "Now there is a sport in which I would have been great. Six feet two inches tall, one hundred eighty pounds, and faster than hell!"

Doctor Middlekauff went to great lengths to protect his girls. He felt all girls and women were fragile and must be looked after and cared for. This may have been part of his early teaching as a child. But probably it stems from the grief he suffered while standing by helplessly as his daughter, little Edith, died of scarlet fever. He was so adamant concerning the safety of his daughter Doris that he required her to stop by his office on North Main Street so he could take her across the railroad track when she went to south Hays City. He would then make an appointment to bring her back across the tracks when she returned. He said he realized the absurdity of the maneuver, but it made him feel better.

Hays City was a country town and even a doctor might be thought lazy if he didn't have some farm stock. In addition to Rex, the dog, and Old Charlie Horse, the Middlekauffs had chickens which they allowed to range over the country. Every evening Doc-

tor Middlekauff would remind the chickens where their home was by feeding them grain and table scraps, thus keeping chickens on hand for Sunday dinner. It wasn't long until the chickens not only knew their home but also knew their provider and sallied forth each afternoon to meet him as he returned from work. Rex and the chickens would wait at the draw, as if in ambush, half way between the office and home. Then when Charlie Horse came pulling Doctor in his cart, they would join in the procession, barking, cackling and flapping their wings all the way home.

Along with his interest in animals, Doctor Middlekauff yearly planted a garden of no small proportions. He did all the work himself, from the spading to the harvest, and seemed to obtain great satisfaction from working in the soil. He worked in the evening if light enough and early in the morning before the family awakened; he kept family and friends in tomatoes, onions, peas, beans, potatoes and asparagus.

In 1879 Doctor Middlekauff bought a saddle horse and made his calls on horseback. Riding across country he used landmarks by day and lanterns on high posts which farmers would put out to guide him by night. Soon he found it more comfortable to go by cart and traded in his saddle horse for Old Charlie, a cart horse. He customized his two-wheeled cart by lining it with tin to shut out cold air and hold in the warm air. In winter Josey would take a hot soap stone from the stove and wrap it for the bottom of the cart and Doctor's feet. When his calls were over, Doctor Middlekauff would tie the reins around the whip handle, place the whip in its socket, then doze while Charlie took him home. He placed great confidence in Old Charlie Horse and said it was safer to give Charlie his head when lost in a blizzard than to drive.

The new Ford that emerged, naked and unafraid, from the little assembling room at No. 9 Piquette Avenue in Detroit, one fine October afternoon in 1908, was not then considered to be of royal birth.

Ford's car caught Doctor Middlekauff's eye and kindled in him a desire to own one. At first this desire was thwarted because no dealer existed in Hays City; that is, no dealer existed until Doctor Middlekauff applied for and received the franchise for the Ford dealership in 1907. His first shipment arrived in Hays City by Union Pacific Railroad in the form of two model "R" Fords. What cars they were! They were advertised as "A car for those who want something special." The bodies were red with brass trimming. They had rich leather upholstered bucket seats, running boards, side oil lamps, French tube horns, and tail lights all as standard equipment. Most of Hays City's 1,711 citizens were on hand as the cars were unpacked and finally assembled. Doctor Middlekauff

hired a mechanic to teach him to drive and then gave everyone rides up and down Main Street. The 15 horse power engine pushed the car on level ground at the terrifying speed of 15 miles an hour which was said to take your breath away. Some stated that driving faster would make it impossible to breathe.

Now having his car (*Figure 5*), Doctor Middlekauff dropped his dealership franchise and sold the second car to a horse and buggy doctor friend of his in Ellis, Kansas. The first night the doctor friend brought his car home he was heard to exclaim as he drove it into the barn, "Whoa, whoa damn you!" and then drove on through the opposite wall.



Figure 5. Doctor Middlekauff, his pipe and Ford.

A Doctor's Dream

From the days of their birth, Doctor Middlekauff dreamed that his boys would become physicians. He believed that there was no more noble a profession than that of a doctor. As soon as his boys enjoyed being out of doors, he would take them riding in his cart pulled by Old Charlie Horse. As the years passed, they drove him on calls, at first in the horse cart, and later in the Ford. He was very proud of his boys and certainly should have been; Jack was big like his father and a great athlete; Major was small like his mother and smart as a whip. Doctor Middlekauff often planned the two-story building he and his sons would build on North Main Street. They would have

offices on the main floor and the most up-to-date operating room on the second floor. He hoped one of his sons would be a surgeon, so he could operate his cases and not be forced to send them to Kansas City. This was his dream.

Whenever appropriate, Doctor Middlekauff would enlist his sons' help in his practice. Major and his friend, Harry King, often helped, but it was another story with Jack.

"I used to drive Dad on calls and really enjoyed it but couldn't stomach blood. He always wanted me to help but knowing I might get sick, I begged off again and again. One Saturday morning after a delicious breakfast, I drove Dad to the office and then planned to look around town. When we arrived, a patient with a carbuncle was waiting. Even thinking about helping with the case made my insides shudder, but I was unable to dissuade Dad from needing my assistance. The abscess ruptured unexpectedly as I washed it and sent my bowels into convulsions and me into the street to lose my breakfast. This episode finally made Dad realize that, noble as it was, the practice of medicine was not for me. From that day on we specialized; I drove and Dad doctored."

Although Major was not completely enthusiastic about helping his father in his practice, he often did and became known to the town as "Little Doc." He was more like his father in personality but was much smaller in stature (*Figure 6*). While his brother was known as "Jack the Ripper" for his prowess in basketball, Major was lucky to make the team as a substitute and often didn't even get a uniform. However his quick wit and scholarly ability adequately provided for him, sending him from the Hays City school into the initial class at the Fort Hays Normal in 1904. Finally after a year at the Normal, Major enrolled in pharmacy at Kansas University. He had decided not to be a doctor.

Doctor Middlekauff was disappointed, but understood, and set aside one dream to make room for new ideas. He became the first-made Mason in Hays, a 32nd degree Mason, president of the school board, a leader in the community, and an investor. His favorite investment was a cement mill built west of Hays City by his friend I. M. Yost. The idea was sponsored by a K. U. Geology professor. It required a huge investment but soon started to pay for itself. The professor knew Doctor Middlekauff's son as a good student and suggested that, following graduation, Major take extra work in chemistry in order to become a chemist at the mill in hopes that he might some day take over the management.

In a few years the needed schooling was accomplished, and Major returned to the mill. He was one of many chemists at Yocemento, a rapidly growing town six miles west of Hays City. He did his work



Figure 6. Major Middlekauff (right end middle row) in his baseball uniform.

well but soon found his reputation as "Little Doc" was bringing him more medical problems than chemical problems. When a man was hurt or ill, he was taken to "Little Doc." Seldom was a real doctor called. This was pleasing to Major but set him to thinking about his choice of work. His mother related the following story.

"Every time Major would come home, Dad could see that something was bothering him. He didn't question Major because he thought he was probably like all other young chaps, crazy in love with some girl and not making enough to support her. So he just sulked around. Finally one night Dad couldn't stand to see Major so down and unhappy so he asked him, and Major answered, 'I'm tired; we have lots of work at the mill and I'm tired when I come home, that's all.'

" 'Now Major,' said his dad, 'you're not talking to a mill hand. Tell me the truth. I don't want anything between us.'

"Major then told him, 'I know it isn't fair to ask, now that Jack and Doris are ready to go to the university, but I want to read medicine. I know you have a wonderful practice, but three children in the university is too much.'

"Overjoyed, his father said, 'I don't know what you know about my bank account, but you're going to quit work tomorrow and start looking for the best medical school in the country.'"

That next fall, at the age of 27, Major enrolled in the Jefferson School of Medicine in Philadelphia almost as happy a man as his father. Major was a good and mature student who did well in all his courses. He worked in the pharmacy and paid most of his educational expense. During the second year in

school he wrote home to his father for money to buy new clothes. His father, a little surprised by the request, wrote back and suggested he be a little more frugal and a little less of a fashion plate. Major's next letter read as follows: "Please do not think me a dandy. I have for some unknown reason started to grow and look something similar to a scarecrow."

Dr. Middlekauff was only too happy to dress Major's improving stature.

The United States went to war in 1917 while Major was serving in his internship at St. Margaret's Hospital in Kansas City, Kansas. Like all young men, Major and his brother thought the draft too slow and volunteered for service. Major was accepted in the army and trained at Fort Oglethorpe, Georgia. He loved army life and wrote home of his many exciting experiences. July 7, 1918, Major was transferred to France and soon afterwards ceased his usual correspondence with his parents. December 25, 1918, the Department of War informed Doctor Middlekauff that his son Major had died of flu October 18, 1918.

Dear Doctor Middlekauff,

Major was my right-hand man in preparing the September drive at Dombasle. You may always cherish the memory of having a faithful, patriotic son, whose devotion to duty was never lacking and who never shirked his work or avoided danger.

COLONEL JOHN A. MCKENNA

Requiem

No longer a dusty country town, Hays rushed into the bustle of the 1920's. The historically colorful North and South Main Streets had become no more than rundown side streets along the railroad track. The saloons, offices, and stores served for storage and the sales of eggs and cream. The old west, Wild Bill, Custer and the rest were forgotten. Hays was moving ahead and only the bank-step philosophers had time for the golden past. Hays City was now called Hays; the one-time Indian fort was a teachers' college. Rutted streets were smoothly bricked. The population had doubled, business had thrived, a grocery clerk named Wiesner had turned his \$600 savings into a department store that rivaled those in any city. The first hospital (Figure 7) was joined by a second and many young doctors came to fill the growing need. Hays was a young man's town.

As the original town grew old so did its original citizens. Though still useful, they were often forgotten or skipped over because the vogue was for the new and shining. Those whose children followed their profession kept up with the times; the rest were left behind.

Doctor Middlekauff, gray and weathered, continued to be the same gentleman, scholar, and physician



Figure 7. The Beech house on 13th Street that became Saint Anthony's Hospital, the first hospital in Hays City. (Photograph by Hays News)

that had come to Hays 46 years ago. He resigned from the school board in 1919 after 15 consecutive years as its president. He decreased his other extra professional activities and carried on his practice of medicine in the 15 by 30 foot frame office he had occupied so long on North Main. Each day he saw a few new patients, but mostly he saw his old patients, patients who were unimpressed by the vagues, patients who wanted good care by an old friend.

Doctor Middlekauff tried his best to keep up with the new scientific era of medicine but felt himself tiring and falling behind. Major was gone. He had no one to carry on his work. When he stopped prac-

ticing, he would forfeit his race with life and his dream would be gone. Doctor Middlekauff felt depressed and fought to keep going. He worked more; he started building a new house, but fell while examining it and broke his hip. At last his depression overcame him and on August 29, 1925, he took his own life.

Doctor Middlekauff came to Hays from a rich heritage. He carved a notch in the rough frontier which became the first foothold for medicine as well as for the community.

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Flight Fatalities Studied

Autopsy Investigation of Aircraft Accidents

WILLIAM J. REALS, M.D.,* and

RICHARD E. DANIELSON, A.B., M.T.(A.S.C.P.), *Wichita*

THE ROLE of the pathologist in the investigation of aircraft accidents is well established both in the United States and abroad. As the specialty of Aerospace Medicine has expanded in little over a decade so too has the Aerospace Pathologist become increasingly useful in the overall program of accident investigation and prevention as a member of the aerospace team. The work of the group in England who investigated the Comet disasters¹ has appeared in the medical literature. In this country a significant contribution has been made by pathologists from the Armed Forces Institute of Pathology who have also published their work; among these are Townsend,²⁻⁸ Stembridge,⁹⁻¹¹ Lovell,¹²⁻¹⁵ Silliphant,^{16, 17} and Dominguez.¹⁸

In 1960, following the investigation of the bombing of an airline DC-6B near Bolivia, North Carolina, the Federal Aviation Agency appointed a number of civilian pathologists to serve as consultants to the Civil Air Surgeon to assist the Agency and the Civil Aeronautics Board in their investigations of human factors in aircraft accidents. For some time prior to the establishment of the civilian group this function was carried on solely by the Armed Forces Institute of Pathology, Washington, D. C. The Institute continues to support the effort and is the central laboratory for toxicological investigation as well as the repository

of information and material concerning fatal aircraft accidents in the United States.

Current estimates¹⁹ for the next 15 years in aviation indicate the commercial air carriers will not in-

The autopsy investigation of aircraft accidents constitutes the most significant method in the investigation of the human factors involved. As aviation expands in the next two decades designated Aviation Medical Examiners will play an increasingly important part in accident investigation and they should prepare for this duty.

crease their fleets of aircraft above the two thousand now in service due to the increased load factors of the jet transport. During this same time military aircraft in service will decline by 10,000. In this interval, however, general aviation—private, business and executive flying—will increase by 41,000 aircraft. To meet the challenge of air safety presented by this enormous growth the Civil Air Surgeon has requested the aviation medical examiners (physicians designated by the Federal Aviation Agency to examine pilots for medical certification for flying) to serve as accident investigators and to assist in the securing of autopsies

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on accident victims. Because of this voluntary service the aviation medical examiner is often the first medical person on the scene of not only the light aircraft accident but also first on the scene of a major commercial disaster. The Federal Aviation Agency is devoting several hours to the subject in its series of seminars being conducted in various areas of the nation, for aviation medical examiners.

Approximately two-thirds of all light aircraft manufactured in the United States are produced in Kansas. Because of favorable terrain and climate there exists a large number of pilots in our state flying light aircraft. Many Kansas physicians are themselves pilots, aviation medical examiners or have other interests in aviation and may at some future time be called upon to assist in the investigation of aircraft accidents, either in the air transport category or in the general ("light") aviation class.

In January, 1963, the Civil Aeronautics Board published statistics for fatal accidents in the general aviation field²⁰ for 1961, the last year available. Four hundred twenty-six fatal accidents occurred in that year with 760 fatalities. Only a few of this number were investigated by pathologists. By contrast, in 1961 the domestic scheduled airlines had only five fatal accidents with 124 fatalities. All of these incidents were investigated by the human factors team. Obviously, we must increase our knowledge of the patterns of fatal injuries in accidents in general aviation if the cause of accident prevention is to be advanced.

The responsibility to conduct the investigation and determine the probable cause of the accident rests with the Civil Aeronautics Board. At each accident a human factors team is formed, made up of a Civil Aeronautics Board engineer, a flight surgeon from the Federal Aviation Agency and the pathologist. A variety of other individuals assist this group in their work: Federal Bureau of Investigation agents, local police officials, Federal Aviation Agency and Civil Aeronautics Board personnel, employees of the airline involved and the local medical examiner or coroner. The most important duty of the aviation medical examiner, if asked to serve, is to contact the local medical examiner or coroner in order to secure legal permission for autopsies on the victims. Despite increasing knowledge of the importance of the post mortem examination in aircraft accidents it may be necessary to exert considerable effort to obtain this permission. No attempt to move the bodies to a morgue should be made until the human factors team has visited the crash site to secure photographs, measurements and other data. When this has been accomplished identification and autopsies can be undertaken preferably at a hospital morgue where facilities for x-rays are available as well as skilled assistants. In the event that an accident occurs in a remote area the

aviation medical examiner may of necessity be called upon to perform the autopsy and secure toxicological specimens as well as photographs and other data. While the physician may feel that he is unskilled in post mortem techniques he is the best observer if a pathologist is unavailable and should not hesitate to conduct the examination. Preparation for these duties by aviation medical examiners should include a review of autopsy methods; the manual prepared by the Armed Forces Institute of Pathology and jointly published by the three armed services is highly recommended.²¹

Material to conduct an investigation should be available to the aviation medical examiner in a compact "fly-away" kit. This should contain at least surgical gowns and suits, plastic or waterproof aprons, scalpels and scissors, surgical gloves, tags and a camera with color film and a light source. A more complete kit prepared by a pathologist contains equipment and supplies in sufficient quantity to perform examinations and obtain photographs of at least 100 bodies due to the increased passenger loads in the jet transports. Portable, self-powered, dictating equipment is essential to record autopsy gross descriptions and descriptions on the site. Plastic bags are also carried as well as a heat-sealer to close the bags.

One of the important steps in the investigation is the obtaining of blood, urine and fresh tissue for quick freezing and shipment to the Armed Forces Institute of Pathology for toxicological study. Portions of brain are needed for lactic acid determinations. Elevated levels above 200 mgm. indicate hypoxia. At least 250 gm. of brain as well as similar amounts of blood, lung, liver, kidney, muscle, bone marrow, urine, stomach contents and subcutaneous fat should be collected for quick freezing. These are separately packaged and forwarded. Plastic bags are utilized for this purpose since they do not shatter while being frozen or in transit. Material for histologic examination is also preserved in separate bags utilizing 10 per cent formalin as a fixative. All of these supplies and items of equipment fit into an ordinary suit case and weigh about 35 pounds.

It is suggested that a two-man team be formed for autopsy purposes, composed of a pathologist and a second physician such as a flight surgeon or aviation medical examiner. Because of the uncertainty of travel time of other members of the investigating groups this team should be equipped and organized to begin its efforts as soon as arrival on the scene of the crash. They also should be prepared to call upon local pathologists for assistance and to provide them with material for work as well as an outline of the procedures required.

Two recent accidents will be discussed to illustrate techniques employed in the autopsy investigation.

Both were commercial airline accidents but will serve to illustrate methods and preliminary conclusions as well as the problems usually encountered in all types of aircraft accidents with fatalities.

Accident Number 1

A commercial DC-8 type jet transport with 113 passengers and a crew of seven made a landing at Stapleton Airfield, Denver, Colorado, on July 11, 1961. The pilot had reported loss of hydraulic pressure and requested a routine standby of emergency equipment. On touchdown the aircraft rolled about 1,000 yards then suddenly swerved off the runway to the right. The tires on the right landing gear failed causing the aircraft to skid across the turf until it struck a parked truck, killing the occupant, and finally a 30 inch high concrete wall, a part of a new taxi strip under construction. Fire broke out at once on the left wing enveloping the fuselage as engines were torn from the wing. Passengers and crew evacuated the aircraft using emergency procedure. In the rear passenger compartment 16 persons did not escape and were found dead when the fire was extinguished. None of the aircrew were injured or killed. The bodies were taken to a temporary morgue set up in a nearby school gymnasium. A Denver aviation medical examiner was contacted by the investigating authorities and established liaison with the Denver coroner's office. That office directed that the victims be moved to the Denver General Hospital morgue. A group of medical investigators were sent to the scene by the office of the Civil Air Surgeon arriving several hours after the crash.

Upon arrival the bodies were being identified by the Denver police, Federal Bureau of Investigation agents and airline employees preparatory to being released to relatives. The coroner readily granted permission for autopsy examinations of the passengers when contact was established. Three teams were formed consisting of pathologists from the Denver General Hospital and those from the Human Factors Team, morgue attendants and recorders to perform the autopsies and obtain photographs. A fourth team made gross descriptions and obtained photographs of the bodies which were not autopsied. Autopsies were done on eight of the adult fatalities. No definite pattern of injuries were found although all of the bodies showed extensive burns and characteristic cherry red discoloration of tissue associated with carbon monoxide poisoning. Fresh tissue was obtained at autopsy for toxicological examination; heart blood was drawn on all of the bodies for carbon monoxide determinations. Full body x-rays were obtained on the victims autopsied and revealed only minor injuries. The investigation sought to explain why these passengers were unable to escape the aircraft since

none appeared to have suffered serious injuries in the accident.

Findings: Carbon monoxide blood levels varied from 30 per cent to 85 per cent indicating deaths were due to asphyxia following the fire. No serious injuries were found at autopsy or on x-ray examination. Carbon particles in the trachea and bronchi indicated that the passengers were alive for a short time but the extensive burns all were post mortem. It appeared that the intense smoke and heat in the rear compartment quickly overcame the victims and they were unable to escape.

Accident Number 2

On September 1, 1961, at 2:00 a.m., a Lockheed Model 049 Constellation took off from Midway Airport, Chicago, westbound. Approximately five minutes after being airborne the plane crashed in an open farm field near Hinsdale, Illinois, killing seventy-three passengers and the crew of five aboard. The aircraft apparently struck the ground at a steep angle and with considerable power since the aircraft disintegrated on impact. Fire followed the accident as the fuel burned in the wreckage.

When the investigators from the office of the Civil Air Surgeon reached the airport the bodies were being moved to the Cook County morgue. Permission had been readily granted by the coroner of the county in which the accident had occurred to move the bodies for autopsy and identification to the Cook County Hospital.

The Chicago area coroners and funeral directors were well organized for aircraft accidents and cooperated fully. A paper read at the Annual Seminar of the National Association of Coroners in Chicago by Bernard Doyle²² of the Civil Aeronautics Board shortly before the accident had resulted in detailed preparation for incidents of this type.

Three teams of pathologists, flight surgeons and the Cook County coroner's staff pathologists were formed as described in the first accident, to perform autopsies on the aircrew members as well as obtain photographs. Examination of the flight crew members revealed severe injuries with avulsion of the calvarium and brain, evisceration, multiple fractures and traumatic amputations. Although the bodies were badly shattered blood was obtained for toxicological studies on all of the crew. The body of each passenger was examined by the teams and photographed, gross descriptions dictated and heart blood drawn for toxicological studies. Some of the passengers revealed extensive burns but these were judged to be post mortem since the burning was irregular. Fractures of the extremities, skull fractures and perineal tears were found on examination of the passengers with varying

degrees of severity. All appeared to have succumbed on impact.

At that time this accident had the highest number of fatalities for any single aircraft accident in the United States. Although a very large number of bodies were described, photographed and identified the work went forward quickly because of the excellent cooperation between the local coroners and the investigating teams including the airline flight surgeon and his staff.

This accident pointed out the need for wide understanding of the objectives of Aerospace Pathology not only in the medical profession but also in the law enforcement agencies, political bodies and the general public. In this instance previous discussion and a lecture already mentioned prepared the Chicago area to mobilize when this accident occurred.

Findings: The aircrew members all received extensive traumatic injury but blood carbon monoxide levels were less than 10 per cent. No tests for drugs were done because of the small samples obtained. The passengers all received severe multiple traumatic injuries but none showed elevated carbon monoxide levels (a level of 10 per cent is considered high normal; all were less than this figure). From these results it appeared that there was no in-flight fire and none were alive during the fire following the crash.

Summary

Two accidents have been presented to illustrate methods. In accident number 1 only a portion of the passengers were killed since the incident took place after landing. Some did not escape probably due to smoke and asphyxia and not to injury. In accident number 2 the aircraft crashed shortly after take off and was a high velocity, steep angle crash killing crew and passengers instantly. In this case examination ruled out fire aloft and pointed towards other factors to help explain the accident.

Problems encountered in both types of accidents have been discussed. Suggestions for on-the-scene organization have been presented as well as an outline of needed equipment and supplies.

Finally, we have attempted to alert the physicians who have an interest in aviation, either as pilots or examiners, of the need for complete inquiry—including autopsies—in all fatal aircraft accidents.

References

1. Armstrong, J. A., Fryer, D. I., Steward, W. K., Whittingham, Sir H. E.: Interpretation of Injuries in the Comet Aircraft Disasters: An Experimental Approach, *Lancet*, 1: 1135, 1955.
2. Townsend, F. M., and Stemberge, V. A.: Modern Concepts in Investigation of Aircraft Fatalities, *Journal of Forensic Sciences*, 3:381, 1958.
3. Townsend, F. M.: The Utilization of Pathology in Aircraft Accident Investigation. In *Medical Aspects of Flight Safety*, AGARDograph 30, London: Pergamon Press, p. 165, 1959.
4. Townsend, F. M., and Davidson, W. H.: Experience of the Armed Forces Institute of Pathology in Aircraft Accident Investigation, 1956-1960, *Military Medicine*, 126:335, 1961.
5. Townsend, F. M., and Davidson, W. H.: Pathology Investigation of Aircraft Accidents, *Physicians' Panorama*, p. 3, 1961.
6. Townsend, F. M., Davidson, W. H., and Doyle, B. C.: Two Years' Experience in Combined Engineering and Pathology Investigation of Aircraft Accidents. In Press, 1961.
7. Townsend, F. M., and Dominguez, A. M.: Utilization of Toxicology in Aircraft Accident Investigation. In Press, 1961.
8. Townsend, F. M., and Davidson, W. H.: The Man-Aircraft Relationship as Revealed by Pathology Investigation. In Press, 1961.
9. Stemberge, V. A., Craft, W. M., and Townsend, F. M.: Medical Investigation of Aircraft Accidents with Multiple Injuries, *Journal of Aviation Medicine*, 29:668, 1958.
10. Stemberge, V. A., with Berry, Frank B.: The Human Element in Aircraft Accidents, *Annals of Surgery*, 147:590, 1958.
11. Stemberge, V. E. with Hickey, J. L.: Occurrence of Pulmonary Fat and Tissue Embolism in Aircraft Accident Fatalities, *Journal of Aviation Medicine*, 29:787, 1958.
12. Lovell, F. W., McMichael, H., and Townsend, F. M.: Pathology as an Aid to Reconstruction of Aircraft Accidents, *Aerospace Medicine*, 31:745, 1960.
13. Lovell, F. W., with Robie, R. R., and Townsend, F. M.: Pathologic Findings in Three Case of Decompression Sickness, *Aerospace Medicine*, 31:885, 1960.
14. Lovell, F. W., with Rigal, R. D., and Townsend, F. M.: Pathologic Findings in the Cardiovascular Systems of Military Flying Personnel, *American Journal of Cardiology*, 6:19, 1960.
15. Lovell, F. W., and Berry, F. B.: The Medical Profession in Air Safety, *Annals of Surgery*, 153:625, 1961.
16. Silliphant, W. M., and Stemberge, V. A.: Aviation Pathology, U. S. Armed Forces Medical Journal, 9:207, 1958.
17. Silliphant, W. M.: Role of the Armed Forces Institute of Pathology in American Medicine, *Archives of Surgery*, 77:153, 1958.
18. Dominguez, A. M., Halstead, J. R., Chinn, H. I., Goldbaum, L. R., and Lovell, F. W.: Significance of Elevated Lactic Acid in the Post-mortem Brain, *Aerospace Medicine*, 31:897, 1960.
19. Anonymous, Bright Future Seen for U. S. Business and Private Flying, *Aviation News*, Federal Aviation Agency, 1:5, 1961.
20. Statistical Review of General Aviation Accidents, Civil Aeronautics Board, Washington, D. C., January 5, 1963.
21. Autopsy Manual, Departments of the Army, the Navy, and the Air Force (TM 8-300; NAVMED P-5065; AFM 160-19), July, 1960.
22. Doyle, B. C., Fatal Airline Accident Investigation, Human Factors Team Approach, Unpublished, 1960.

ERRATUM

On page 307 of the July, 1963, issue of the *JOURNAL*, Orinase was erroneously referred to as a product of Roche Laboratories.

Orinase is a product of the Upjohn Company, and the sentence should have read "... mild diabetic, for which she took one Orinase® (The Upjohn Company) tablet daily."

Vaginitis Therapy Evaluated

*The Treatment of Trichomonal Vaginitis With Metronidazole**

W. T. WEST, M.D.,** *Wichita*

A NEW SYSTEMIC DRUG has been developed for the treatment of infection caused by trichomonas vaginalis. This article reviews the development of Metronidazole, and describes a clinical trial of the drug in thirty patients with trichomonal vaginitis.

History

The history of Metronidazole seems to have started in Japan where, in 1953, an antibiotic, Azomycin, was discovered from soil samples by the Japanese investigators Maeda, Osato, and Umezawa. Their interest in this compound was excited by its effect against gram negative bacteria and its low toxicity. Two years later the Japanese chemists, Nakamura and Umezawa¹¹ identified the chemical structure of Azomycin as 2-Nitro-Imidazole. Horie was apparently the first to show in 1956 that this compound could destroy trichomonas *in vitro*.

Cosar and Julou, working in the research laboratories of the French chemical plant Rhone-Poulenc, had been searching for products which inhibited trichomonas vaginalis. During the course of their inquiry they found in 1958 an active antibiotic, 7080 R.P., from a stock of streptomycin. Later it was realized that 7080 R.P. was a mixture of two drugs, the only one of which acting upon trichomonas was the same as the Azomycin of Nakamura or 2-Nitro-Imidazole. Research was then concentrated in the field of Nitro-Imidazoles, and many derivatives of this compound were investigated with reference to their effectiveness on trichomonas. The most interesting was 8823 R.P. (1-B-Hydroxyethyl-2-Methyl-5-Nitroimidazole).

8823 R.P. or Metronidazole was found to have low toxicity for the mouse, and was well tolerated by rats and dogs during daily treatment lasting for one month. Further, this compound was very active upon experimental subcutaneous trichomoniasis in the mouse. The animals were completely preserved against infection by a daily dose of 0.12 grams per Kg per Os given for five days.

The first clinical trial of Metronidazole in humans was conducted by Durel, Roison, Siboulet, and Borel¹⁴ in France and published in 1959. Thirteen men and twenty-one women proven to have infection with trichomonas vaginalis were treated with 8823 R.P. The men were given systemic medication only, receiving 500 mg by mouth daily for ten days. All were

This study was conducted in an effort to evaluate the effect of a new systemic drug, Metronidazole, on vaginitis caused by trichomonas vaginalis. The origin and development of the drug has been described. Metronidazole was given to thirty women with trichomonal vaginitis. Twenty-five patients were followed for three months, and twenty-two were cured. An effort to control the study was carried out. The side effects were noted, and the toxicity of the drug discussed.

cured. The women received both oral and vaginal medication. The oral dose was the same as used for the males. In addition, one vaginal tablet of 500 mg was inserted each night for ten days. Seventeen of the twenty-one women were cured. There was no evidence that the drug was effective against monilia albicans. The drug was well tolerated and no serious toxic effects were noted. The authors were encouraged by these results and felt that extensive investigation was warranted.

Since this first report appeared in 1959, Metronidazole has become the subject of intense interest in Europe, Great Britain, Canada, and more recently in the United States. Many articles have been published in the journals of these various countries reporting on the use of Metronidazole in thousands of patients. The cumulative experience of these authors has been universally good, both as to therapeutic results and to tolerance of the medicine. The percentage of cures has varied from 80 to 100, and, as yet, no serious toxic reactions have been reported. The results may be

* Metronidazole was supplied as "Flagyl" through the courtesy of G. D. Searle & Company.

** From the Department of Obstetrics and Gynecology, Wichita Clinic, Wichita, Kansas.

better if the lady and her consort are treated at the same time. The drug is supplied as tablets of 250 mg and suppositories of 500 mg. The usual dose is two tablets by mouth twice daily for seven to ten days. It now seems as though local treatment in the vagina is unnecessary. As yet there is no evidence that Metronidazole is of risk to a fetus.

Material and Methods

Women with the complaint of vaginal discharge and pruritus vulvi were considered as candidates for the study. A complete history and physical examination was done on each patient. Papanicolaou smears and vaginal cultures on Nickerson's media for yeast were obtained on all patients. The diagnosis of trichomonal vaginitis was confirmed by observation of the protozoa in wet smears. Culture for trichomonas was not done. The majority of patients had complete blood counts and a urine examination before and after therapy. Patients were followed for three months, and dismissed at the end of that time as either cured or resistant. No effort was made to treat the husband or consort, but patients were asked to abstain from coitus during the week of treatment. At each examination during the three months wet smears were observed for trichomonas. No pregnant patients were treated.

The dosage of Metronidazole was as follows: Patients were asked to take by mouth two 250 mg tablets twice daily for seven days. No vaginal treatment of any type was used, and douching was discontinued. In an effort to control the study a number of patients with trichomonal vaginitis were treated with a placebo using the same dosage schedule, and followed in the same fashion as the other patients. The placebo was dispensed by the druggist without the foreknowledge of the physician.

Results

A. Control. Eleven patients received the placebo. The results of treatment are noted in *Table 1*.

In all instances failure was identified by the persistence of symptoms and observation of the protozoa in wet smears. The one lady who was followed for four weeks continued to complain of vaginal discharge

and itching, but trichomonas could not be identified in the wet smear until her last visit.

B. Metronidazole. Thirty women were treated with one course of oral therapy only. The results are noted in *Table 2*.

TABLE 2

<i>Length Observed</i>	<i>Patients Lost</i>	<i>Patients Observed</i>	<i>Cures</i>	<i>Failures</i>
1 week	0	30	29	1
4 weeks	3	27	24	3
8 weeks	4	26	23	3
12 weeks	5	25	22	3

Cure was considered to have occurred when patients became symptom free, and trichomonas could not be found in the wet smear. Three women who were cured developed vaginal discharge and itching during the period of observation, and all produced positive cultures for monilia albicans. Four patients who were cured for the period of observation later developed trichomonal vaginitis four to six months after the follow up had ended. The effect of the drug was noted by the patients within three to five days with disappearance of subjective complaints. Examination of wet smears one week after therapy revealed disappearance of the protozoa and pus cells and a reappearance of normal epithelial cells.

Side Effects

None of the side effects were severe enough to interrupt therapy. Four patients complained of gastrointestinal disturbance which varied from anorexia to vomiting. No diarrhea occurred. Two patients reported drowsiness for a few days and one stated that she "did things without thinking." Two patients noted dryness of mucous membranes in the mouth. One patient observed brown urine. One patient complained of headache and "scum" over the right eye appearing about one week after treatment was started. Four weeks later she was examined by an Ophthalmologist who found loss of vision in the nasal field of the right eye. The eye disease was thought to be typical of toxic amblyopia. Two weeks later the visual fields were normal and the headache had disappeared.

Urine was examined for the presence of bile in thirteen patients. In four patients a trace of bile was reported at varying periods of time after therapy up to and including three months.

Complete blood counts were obtained before and after therapy in twenty-two patients. No change of any significance could be detected.

TABLE 1

<i>Length Observed</i>	<i>Patients Lost</i>	<i>Patients Observed</i>	<i>Cures</i>	<i>Failures</i>
1 week	0	11	2	9
2 weeks	0	11	1	10
4 weeks	0	11	0	11

Discussion

Trichomonal vaginitis has been a difficult problem to manage. The only approach has been local therapy in the vagina consisting of many different types of suppositories, ointments, jellies, and douches. All of these are unpleasant to use and seldom curative. There has been no method of dealing with trichomonas in the urinary tract of women and no way to manage trichomonal infection in men. Since the disease is almost certainly venereal its management in males is of much importance. The recommendation of sexual abstinence to women with vaginitis has never been received with much enthusiasm by their husbands. Though trichomoniasis is not fatal, the disease is of some importance from the standpoint of symptoms and expense.

Considering these factors, the interest in Metronidazole is not surprising. This is the first orally effective drug against trichomonas vaginalis that has been developed. The cure rate is high, especially if both sexual partners are treated at the same time, and local therapy is unnecessary. The drug is well tolerated by patients from the standpoint of immediate side effects.

Less well clarified are the toxic effects, if any, that are more subtle in their manifestations. One patient in this series developed toxic amblyopia shortly after therapy with Metronidazole. The etiology of this case is unknown, and it would hardly be fair to incriminate Metronidazole on the basis of one experience. Nevertheless, the chronological association between the amblyopia and ingestion of the drug was close.

Somewhat more disturbing was the recovery of traces of bile in the urine of four patients. The significance of this observation remains to be determined. McGill and Black reported that one of their patients had jaundice following therapy but concluded that it was coincidental. Several authors have reported the patient's observation of brown urine. It has been suggested that this brownish discoloration may be due to a metabolic derivative of Metronidazole rather than to bile pigments. Teton and Treadwell have looked for bile in the urine of twenty-eight patients after therapy and found none. An hepato toxic effect of the drug has not been described in the literature. An effort to assess liver function after ingestion of the drug was reported by Schram and Kleinman in 1962. They found no evidence of liver damage on the basis of cephalin flocculation.

The other toxic reactions noted in this study, i.e., nausea, vertigo, drowsiness, have been reported by other authors, and have not been a problem. No evidence of neurological disturbance was noted in the patients reported here.

Conclusions

1. Metronidazole is an effective drug against trichomonas vaginalis.

2. Local therapy in the vagina is not necessary.
3. The drug has no effect against monilia albicans.
4. Immediate side effects are mild.
5. Toxicity remains to be clarified.

References

1. Cosar, C., and Julou, L.: The activity of 1-(2-hydroxyethyl)-2-methyl-5-nitroimidazole (R.P.8823) against experimental trichomonas vaginalis infections. *Ann. Inst. Pasteur*, Par. 96(2) 238-241, Feb. 1959.
2. Dill, L. V., and Sheffery, J. B.: Evaluation of some of the therapeutic mechanisms in the treatment of trichomonas vaginitis. *Amer. J. Obstet. Gynec.* 80:1101-1103, Dec. 1960.
3. Durel, P., Roiron, V., Siboulet, A., and Borel, L. J.: Systemic treatment of human trichomoniasis with a derivative of nitro-imidazole, 8823 R.P. *Brit. J. Vener. Dis.* 36:21-26, March, 1960.
4. Durel, P., Roiron, V., Siboulet, A., and Borel, L. J.: Trial of an antitrichomonal drug derived from imidazole: (R.P. 8823) *C. rend. Soc. fr. gyn.* 29(1) 36-45, Jan. 1959.
5. Ennis, E. H.: An effective drug for trichomoniasis. *Obstet. & Gynec.* 19:592-594, May, 1962.
6. Horie, H.: Anti-trichomonas effect of azomycin. *J. Antibiotics*. Ser. A. 168, July, 1956.
7. Jones, C. P., Thomas, W. L., and Parker, R. T.: Treatment of vaginal trichomoniasis with metronidazole; a new nitroimidazole compound. *Amer. J. Obstet. & Gynec.* 83: 498-502, Feb. 15, 1962.
8. Luthra, R., and Boyd, J. R.: The treatment of trichomoniasis with metronidazole. *Amer. J. Obstet. & Gynec.* 83: 1288-1293, May 15, 1962.
9. McGill, M. I., and Black, M. D.: Observations in the use of metronidazole in the treatment of trichomoniasis. *Amer. J. Obstet. & Gynec.* 83:1280-1283, May 15, 1962.
10. Maeda, K. T., Osato, T., and Umezawa, H.: A new antibiotic; Azomycin. *J. Antibiotics*, Ser. A, 6:182, 1953.
11. Nakamura, S., and Umezawa, H.: Structure of azomycin (2-nitroimidazole). *J. Antibiotics*, Ser. A, 8:66, 1955.
12. Nakamura, S.: Structure of azomycin; a new antibiotic. *Pharm. Bull.* 3:379, 1955.
13. Roland, M.: Clinical trial of metronidazole, an oral trichomonacide. *J.A.M.A.* 180:242-244, April 21, 1962.
14. Schram, M., and Kleinman, H.: Use of metronidazole in the treatment of trichomoniasis. *Amer. J. Obstet. & Gynec.* 83:1284-1287, May 15, 1962.
15. Teton, J. B., and Treadwell, N. C.: Evaluation of a systemic trichomonacide. *Obstet. & Gynec.* 21:356-362, March, 1963.
16. Watt, L., and Jennison, R. F.: Clinical evaluation of metronidazole. A new systemic trichomonacide. *Brit. Med. J.* 5203:902-905, Sept. 24, 1960.

Is life worth living? This is a question for an embryo, not for a man.—*Samuel Butler*

If I lose mine honor, I lose myself.
—*William Shakespeare*

When we are not sure, we are alive.
—*Graham Greene*

The sun will set without thy assistance.
—*The Talmud*



Developmental Cysts of the Jaw

Edited by CHARLES T. HINSHAW, JR., M.D.*

Dr. Joseph J. Duerksen (Surgery Resident): The patient is a 49-year-old man who entered the medical center with the chief complaint of a lump in his left jaw. The patient admitted he had had a deformity of his jaw since a fracture of the mandible in 1954. He stated that an area just anterior to this deformity had begun to swell, was giving him some pain, and that he had a fever, chills and a foul taste in his mouth. All of this occurred within the seven days before his admission. The past medical history shows that in 1938 he had an impacted molar in the same area, with an abscess. Ten years later he had a recurrence of this that required scraping of the bone. Then, in 1954 he had the fracture that I mentioned. In 1961 he had a complete dental extraction. The other parts of his history are non-contributory. An aspirate was done of this tender mass, anterior to the angle of the mandible, and it grew out anaerobic strep. Cultures for TB and fungus were negative. Dr. Tice will show the x-rays.

Dr. Creighton A. Hardin (Moderator): Was the fracture that we know of in the site of previous abscesses?

Dr. Duerksen: Yes, we think it was. The fracture was the result of an injury which also resulted in fractures of ribs and of the back.

Dr. Galen M. Tice (Radiologist): We have an expansile lesion that seems to involve the ramus, condyle, and body of the mandible (*Figure 1*). There are areas of large and small cysts. My reaction was not osteomyelitis. I thought this was a cystic lesion of some type, an adamantinoma. Malignancy was not considered seriously because there is no break in the cortex, no evidence of invasion, simply expansion of the bones.

Dr. Hardin: Has the process radiologically crossed the mandible to the opposite side?

Dr. Tice: It is slightly across the midline.

Dr. Hardin: Does this patient have any inferior alveolar symptoms, pressure, pain, or other symptoms?

Dr. Duerksen: He had local pain. There was no apparent loss of strength in the muscles of mastication. The pain was brought on by chewing and seemed to be worse while lying down.

Dr. Frank A. Mantz (Pathologist): It has long been my feeling that physicians do not spend enough time considering problems which they feel are primarily dental. Yet, the fact remains, they are often called upon to handle such cases, and it behooves all of us to have some knowledge of this region.

The resected specimen, which is partially hemisected, has a large and at least pseudolocular, if not multilocular, cystic space which has replaced the bone itself (*Figure 2*). Contained within it is a large amount of somewhat grumous, yellow material. The cyst itself, however, is lined by what would appear to be a relatively smooth mucous membrane. The surrounding tissue is the site of extensive edema and strongly suggests that a diffuse inflammatory process is in progress. It is of some significance that there has been a total extraction of all the teeth in this area. No solid, tumor-like tissue is present, and this I feel represents a developmental lesion of bone or a residual of the developmental alterations which occur in the formation of teeth. I will try to bring that out in just a moment.

Histologically, this lesion is a rather handsome one to examine. One sees that it does indeed have an inner lining which is composed of epithelium, an outer layer which is composed of what appears to be dense reactive fibrous tissue, and outside of this a layer of bone which at some sites is distinctly eroded

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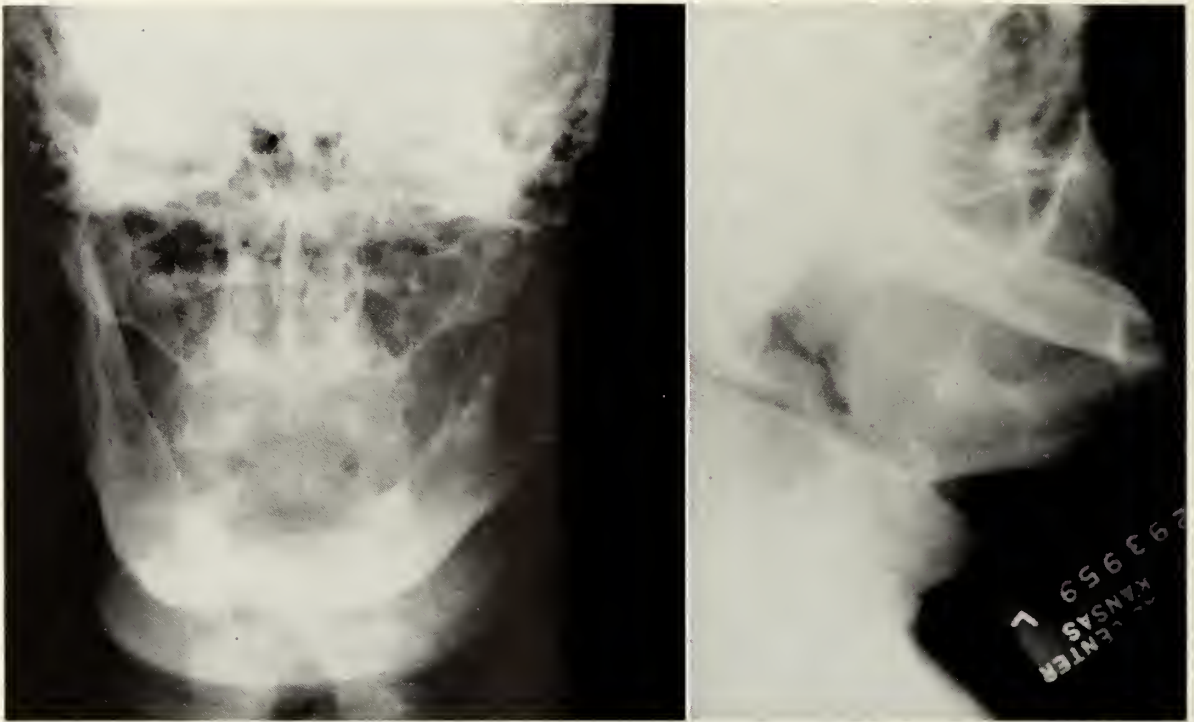


Figure 1. Films showing an extensive, cystic lesion of the left mandible, with expansion, but not destruction, of the cortex.

away (Figure 3). Higher power view shows that the cyst lining is composed exclusively of very well differentiated stratified squamous epithelium in which there is no evidence of differentiation into some weird type of tissue and in which certainly there is no cellular atypicality. In some areas, beneath the epithelium and within the dense fibrous capsule, there are additional islands of squamous cells. I think one could say that these are differentiated squamous cells since in the central area one can see that they go on to the formation of very distinct squamous, keratinaceous material. I make a point of this because, if this was an ameloblastoma, which in my opinion it is not, one would see a differentiation into tissue which closely resembles the enamel organ. The so-called stellate reticulum forms out of this epithelial tissue, with the interstitial deposition of ground substance, kin to the enamel which covers the crown of the tooth. Deposits of this variety were very rare indeed; as a matter of fact, I could find only one. In other areas the lining of this variety were very rare indeed; as a matter of times replaced with rather extensive granulation type tissue in which the predominant cell is the plasma cell, denoting that this is indeed a chronic process and presumably has invoked a great deal of local antibody formation.

In still other areas of the cyst, one finds scattered throughout the fibrous tissues small nodules that appear granulomatous, with foreign body giant cells, and

with these peculiar diamond shaped or cleft-like spaces that are evidence to the pathologist that large amounts of cholesterol are present. Cholesterol represents a breakdown product of many tissues and tends to accumulate where necrosis has been present over a long period of time. I could not use this as sole evidence that this was an ameloblastoma since they are associated so frequently with other chronic inflammatory reactions. In the adjacent bone in many areas there is evidence of a chronic, indolent osteomyelitis, with replacement of the interosseous spaces by loose fibroblastic tissue in which there are many chronic inflammatory cells.

The pathogenesis of this lesion deserves some consideration. I think physicians should have some understanding of development of the tooth because deviations in it produce a number of lesions of the jaw. If you will recall, the tooth forms by an invagination of the surface squamous epithelium, which grows downward, ultimately expanding to form a large mass of epithelium which is the primordial tooth germ. In due course of time, normally, this mass is invaginated by separating mesenchyme, which ultimately takes the form of the substance of the tooth, namely the dentine and cementum, and forms the outline of the tooth projecting into this squamous epithelium which acts as a cap. The squamous epithelium undergoes alterations peculiar to itself, namely the elaboration of the interstitial ground substance

which ultimately caps the tooth and becomes the enamel, that part which presents above the gum after the tooth erupts. Now, in general, the epithelium which is residual to this particular process undergoes involution. As the dentine organ expands upward a narrow zone of the epithelium comes to lie along side the tooth and is known as Hartwig's membrane. Likewise, in due course of time, with further development, this becomes broken up and one has, in most cases, just little residues of squamous epithelium scattered around this area, sometimes extending almost up to the surface. The residue of the primordial invagination is known as the debris of Malassez.

Deviations along the course of this entire process may give rise to a number of cystic structures absolutely identical to those we have seen today. First of all, suppose we had invagination, with the formation of the primordial tooth germ, and development then



Figure 2. Hemisected specimen from the left mandible, showing cystic transformation of bone and dark, inflammatory granulation tissue.



Figure 3. Section of the cyst wall, with squamous epithelial lining at the top, a middle layer of fibrous tissue, and cortical bone of the mandible at the bottom.

stopped. There is no differentiation into dentine and cementum structures and no formation of enamel at all. Cystic alteration may occur within this and may expand and give rise to a massive lesion known as a primordial or follicular cyst, lined with squamous epithelium. The only distinguishing feature in such a case is the fact that no tooth ever forms at this site.

Second, let us suppose this process goes on, in the way that we have described, but there is an abnormality in the development of the tooth. The dentine and cementum form well, but the structure with the primordial enamel organ does not involute normally nor does it, perhaps, form enamel normally, but undergoes cystic change. In such instances, usually, the tooth fails to erupt and remains as an impaction and lies at right angles, let us say, to the normal plane. Here then, we have a large cystic structure, generally surrounding the crown of the tooth with the formation of what is known then as a dentigerous type of cyst. These generally are over the crown process and the tooth does not erupt, or only partially erupts. A similar process, however, may occur with the formation of normal enamel but the formation of a cyst lateral to this. These are lateral dentigerous cysts and

they too are associated with a lining which is strictly squamous, and which may expand and produce a lesion just like we've had today.

The history that we have is that back in 1938 he developed an abscess at which time he was found to have an impacted tooth. It seems perfectly reasonable that we are here observing residua of a lateral or possibly even a primordial, central type of dentigerous cyst. This I cannot exclude.

One other possibility exists, however, and this represents the most common cyst which is observed in the jaw. You will recall that the normally formed tooth, as it erupts, has the enamel on the outside and the mesodermal structures extending downward. You will also recall, we often have little residua of this primordial invagination, the debris of Malassez. Now, it's a peculiar thing that when inflammation occurs in this area, with the formation of the standard dental granuloma or tooth abscess, it often encompasses little particles of this debris of Malassez. How the inflammation gets down there is pretty obvious. There is usually a cavity extending to the pulp canal, with inflammatory reaction coming down and entering the surrounding connective tissue. It is a peculiar actuality that when this residue of the debris of Malassez becomes incorporated in the inflammatory reaction it tends to undergo rather marked proliferation and often undergoes cystic change. It ultimately ends up as a large cyst which surrounds the apex of the root of the tooth, is lined with squamous epithelium, shows the residua of extensive inflammation, usually throughout its wall, and may expand remarkably to involve the entire mandibular process. This is the pathogenesis of the commonest of all lesions observed in this area, the so-called radicular cyst.

I find in this case that it is impossible to determine with absolute certainty whether or not this represents a dentigerous type of cyst which became secondarily infected or a radicular cyst which began as a result directly of dental sepsis and arose from the so-called debris of Malassez. I cannot make this distinction. There is one feature, however, that would lead me to favor the radicular cyst. That is the fact that occasional minute islands of squamous epithelium do exist in the cyst wall and may actually represent some residue of the debris of Malassez.

Now then, what happens to these lesions? They are frequently not recognized by the dentist, the tooth is pulled, and the patient goes on to have continuing cyst formation, ultimately to destroy his entire jaw as we have seen in this particular case.

Dr. Francis W. Masters (Plastic Surgeon): Can you say a word about the developmental origin of the adamantinoma?

Dr. Mantz: Certainly. The adamantinoma, in general, is a tumor, a true neoplasm, which on occasion

may actually be malignant. It is derived from the enamel organ which secretes material to form enamel. As this occurs, with the secretion of enamel, there is a peculiar alteration within the epithelium whereby the cells become quite stellate and often appear to be almost like fibroblasts. Enmeshed between them is interstitial ground substance which is the actual enamel. Residues from the debris of Malassez, from the sheath of Hertwig, or actually from the primary enamel organ, if they become neoplastic, may reproduce this phenomenon, with actual formation of enamel. They tend to form irregular solid masses, not unlike that of invading squamous epithelium, in which this stellate reticulum is very common. They may, on occasion, undergo cystic degeneration. Depending on their degree of differentiation, they may in areas resemble adenocarcinoma. They may in other areas very closely simulate squamous carcinoma. But always the demonstration of stellate reticulum is required before such a diagnosis can be made. Ameloblastomas most usually occur independently as solid, uncomplicated lesions. Occasionally, however, one can see such a lesion develop in the wall of a dentigerous cyst, although I do not believe they have ever been described in association with radicular cysts. Of this, however, I am not personally certain.

Dr. Hardin: This is a benign developmental lesion?

Dr. Mantz: Yes.

Dr. Hardin: The limits of resection were quite adequate?

Dr. Mantz: Yes, quite adequate.

Dr. Hardin: Here is a man who had a benign lesion requiring mandibulectomy. Perhaps Dr. Masters can delineate for us the factors considered in diagnosis and treatment of such a lesion.

Dr. Masters: As you have seen, this is a complicated picture and the major difficulty is its actual complexity. This was approached, clinically, as an adamantinoma or ameloblastoma. There are several things that will help in the differential diagnosis of benign lesions of the mandible. One, the radiologic picture and two, the history. As far as the radiologic picture is concerned, classically, and again this is the only way I can say it, this particular case appears more like an ameloblastoma than it does like the radicular cyst, and I wonder if the multiloculated appearance isn't perhaps due to the associated osteomyelitis. The cystic lesions of the mandible arising from congenital malformation of the teeth, are unilocular cysts. The differentiation between the primordial cyst, as previously described, and the dentigerous cyst is the demonstration by x-ray, or clinically, of a residual tooth crown within the substance of the cyst. If the presence of a tooth crown within the cyst is demonstrated radiographically, the clinical diagnosis is den-

tigerous cyst. If, however, it has a smooth wall, and is an expansile lesion without destruction of cortical bone, this in most instances is a primordial cyst. The demonstration of the radicular cyst, in again a classical case, is relatively easy because it does not include the tooth. These patients will have a normal complement of teeth and the cystic area is at one side or the other of the tooth root, arising, as Dr. Mantz said, from the debris of Malassez.

The ameloblastoma, in our experience, is usually benign. This tumor is more classically an asymptomatic, slowly growing mass involving the mandible. One of the more frequent presenting symptoms is the loosening of the teeth, as the tumor involves the cortical bone directly over the bone socket, causing the teeth to loosen. So, with the particular thought in mind that x-ray gives a very classical multiloculated appearance, as was seen in this case, I am in complete agreement with Dr. Tice that clinically this tumor was an ameloblastoma or adamantinoma. These two terms are synonymous, meaning a tumor arising from enamel organs.

Now from the therapeutic point of view, the early primordial cysts, dentigerous cysts, and radicular cysts are treated by curettage or removal of the cyst wall. If the cyst wall is removed and adequate drainage, and I emphasize this, is given, these will fill in with normal granulation tissue and ossify and within a very short time there will be, really, no evidence of original tumor there. With the dentigerous cyst, of course, the remaining crown must also be removed at the time of curettage or removal of the cyst wall.

In reviewing the history of today's patient, we recall that in 1938 he had a mandibular abscess. Well, this, as Dr. Mantz says, makes you feel that this was probably a radicular cyst. And what happens? The tooth that produced the abscess was removed, but no attempt at curettage was made, since either x-ray was not taken at the time, or possibly for some other reason the associated small cystic structure was missed. This left a sinus tract and an epithelial lined cystic space in his mandible which was an ideal point of

entrance. You can see from the history that this man has had trouble throughout his life. So, as this infection gained a foothold, it began to spread until it involved the mandible to such a degree that this rather radical approach had to be taken because of virtually total mandibular destruction. Benign cystic lesions of the mandible do not need mandibular resection. A mandibular resection is done only for the complications of poor management.

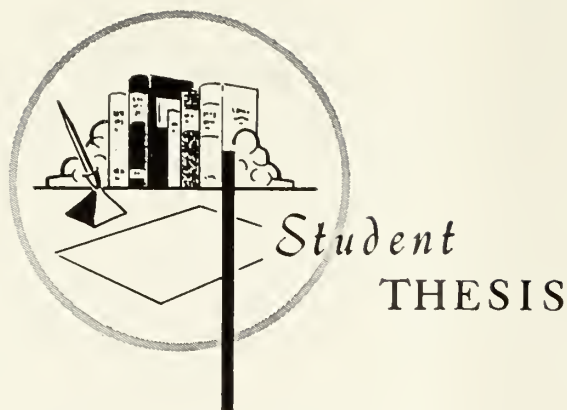
If ameloblastoma is suspected, it is best to establish the diagnosis by biopsy. One of the clinical features of the ameloblastoma is that this is one tumor of the mandible whose biopsy site heals primarily. From the treatment point of view, it is essential, as with any neoplasm, to remove it all, but since malignancy is very rare, a more conservative approach is preferred to the necessary radical attack on an out and out malignancy. Surgically, the tumor is removed with preservation of a strut of mandible for structural intactness. If a portion of the mandible cannot be preserved, the periosteum of the mandible should be conserved, if not already destroyed. In this way regeneration of bone can occur.

Dr. Tice: What is the chance of recurrence of adamantinoma?

Dr. Masters: If they are not completely removed they will undoubtedly return and if recurrence does occur, then the more radical approach should be used. The instance of malignancy in adamantinoma is certainly very uncommon. We have seen a good many adamantinomas but I, personally, have never seen one that was malignant.

Dr. Mantz: Well the one thing about it, adamantinoma is a lesion which, although it may look discreet by x-ray, actually has little streamers that go off into adjacent tissue. If they aren't totally removed, as you mentioned, one leaves little bits of tumor behind and there may be a fair amount of recurrence rate. The reason that these are sometimes considered malignant is because of this local aggressive growth, much more than their propensity to metastasize. I have only seen one that metastasized.

Young drivers in 1962 had the worst record of any group in the United States. Men and women under age 25 represent only about 15 per cent of the nation's licensed drivers, yet they were involved in nearly 29 per cent of all fatal accidents and in more than 27 per cent of all non-fatal accidents.



Primary Hyperparathyroidism: Presenting Symptoms and Clues to Diagnosis

JOHN D. COOPER, M.D., *El Paso, Texas*

PRIMARY HYPERPARATHYROIDISM is a relatively "young" disorder on the medical scene, the first surgically proven case having been described only 36 years ago by Mandl. It is a disease entity which is being discovered with increasing frequency in recent years. However, in spite of the recent increase in number of cases found and the recent interest in the disease as reflected by the many reviews and case reports appearing in the literature during the past few years, the diagnosis of primary hyperparathyroidism continues to be overlooked frequently.

In an attempt to learn the reasons for the recent increase in frequency of cases found and to learn more of the presenting complaints of the disease and those symptoms and findings which lead investigators to the diagnosis, a study was made of the cases of primary hyperparathyroidism discovered and treated at the University of Kansas Medical Center.

General Character of Series

The inclusion of a case in this series depended upon (1) a combination of clinical and laboratory findings compatible with the diagnosis and (2) the finding of a parathyroid adenoma (or adenomas) at operation, with (3) subsequent improvement of clinical and laboratory findings of the disease.

This is one of a group of theses written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. Dr. John D. Cooper is now serving internship at William Beaumont General Hospital, El Paso, Texas.

At the K. U. Medical Center during the past 12 years, 12 cases of primary hyperparathyroidism have been found and proven. During the first eight years only two cases were found; in the past four years (1959, 1960, 1961, and to date in 1962) ten more cases have been diagnosed. This is a relatively small series when compared to those reported at other medical centers. However, this study reflects as in other series, the recent increase in frequency of diagnosis proportional to the degree of awareness and interest in the disease by the physician.

There were eight women and four men in the series, ranging in age from 27 to 73 years. This sex and age distribution is similar to that found in the literature; hyperparathyroidism is found in females 3:1 over males, and is rarely found in childhood.

Presenting Complaints and Symptoms

For many years primary hyperparathyroidism was recognized quite rarely and then only in the form of generalized osteitis fibrosa cystica (von Recklinghausen's disease). Albright, Aub, and Bauer demonstrated in 1934 that the disease could occur in persons with little or no bone disease, that it could be found among persons having urinary calculi, and that indeed in some instances the characteristic biochemical abnormalities were very subtle. Since that time it has been repeatedly emphasized that the signs and symptoms of this disorder can be quite protean. The diagnosis can in most cases be made by being aware of these varying signs and symptoms and by ruling out the disease in persons who at first glance have an

TABLE 1
PRESENTING SYMPTOM AND CLUE TO THE
DIAGNOSIS OF HYPERPARATHYROIDISM

Case No.	Presenting Symptom	Clue
1	Low back pain	Serum calcium
2	Abd. pain	Serum calcium
3	Severe headache	Renal Calculi on x-ray
4	Nausea, vomiting, abd. pain	Bone cysts on x-ray
5	Hematemesis	Serum calcium
6	Renal colic	Same
7	Pathologic fracture	Same
8	Renal colic	Serum calcium
9	Repeated urinary calculi	Same
10	Weakness, easy fatiguability	Renal Calculi on x-ray
11	Abd. pain	Serum calcium
12	Repeated urinary calculi	Same

illness seemingly unrelated to hyperparathyroidism (Table 1).

It is most expedient to divide the signs and symptoms of hyperparathyroidism into several categories depending upon their major association with the skeletal system, the urinary system, the gastrointestinal system, or with symptoms of hypercalcemia per se. It is necessary, however, to remember that admixtures of these symptoms are quite common (Table 2).

Skeletal Symptoms

As previously stated, manifestations of skeletal involvement were the first to be associated with hyperparathyroidism. Today skeletal involvement is seen with decreasing frequency and often is only minimal. This is probably due to earlier diagnosis and to relative protection of the skeletal system by the large intake of dairy products by most persons. Skeletal involvement may take the form of skeletal deformities, localized or generalized bone pain, bony cysts, and pathological fractures. Keating in a recent series of 380 cases of primary hyperparathyroidism from the Mayo Clinic reported only 117 patients (32 per cent) with demonstrable bone disease. Only 42 of these patients had classic osteitis fibrosa cystica. Other recent series report similar percentages of patients with skeletal involvement.

Four patients in this series (33 per cent) had significant complaints referable to the skeletal system, all verified by roentgenograms or significantly elevated alkaline phosphatase values. Three of these patients had classic x-ray findings of generalized osteitis fibrosa cystica in varying degrees, and two of these had a history of pathologic fractures.

Renal Symptoms

It has been repeatedly emphasized that renal symptoms are often common in patients with hyperparathyroidism. Renal symptoms may be produced by (1) urinary calculi per se, (2) urinary tract infections resulting from urinary calculi and urinary stasis thus produced, and (3) by impaired renal function caused by nephrocalcinosis.

It has been estimated that 5 to 10 per cent of all cases of urinary calculi are due to primary hyperparathyroidism. In a recent series of patients with recurrent urinary calculi reported by Boyce and Bradshaw it was found that 12 per cent of these patients had primary hyperparathyroidism.

Four of our patients had a history at the time of admission or previously of passing urinary calculi. These varied from single acute episodes or ureterolithiasis to the passing of urinary "gravel" for as long as 15 years (case No. 9). Four other patients were found by roentgenograms to have urinary calculi, and one was found to have bilateral nephrocalcinosis.

Gastrointestinal Symptoms

Symptoms referable to the gastrointestinal tract are quite varied and may present themselves in the form of peptic ulcer, vague abdominal pain, anorexia, nausea, vomiting, constipation or pancreatitis.

The fact is well confirmed that a large number of persons with proven primary hyperparathyroidism have, or have had, peptic ulcer. The incidence of peptic ulcer in these persons is reported to be from 10 to 30 per cent while the incidence of peptic ulcer in the general population is estimated at 5 to 10 per cent. However, only a small percentage of all peptic ulcers is due to hyperparathyroidism. Frame and Haubrich at the Henry Ford Hospital screened 300 consecutive patients admitted because of peptic ulcer and found only four with hyperparathyroidism, an incidence of 1.3 per cent.

In our series, two patients (cases No. 5 and 12) had symptoms typical of peptic ulcer and were proven to have such (both duodenal in location) by roentgenograms. One of these (case No. 5) was admitted to the hospital because of hematemesis from the bleeding ulcer.

The relationship between peptic ulcer and hyperparathyroidism is not understood. In many cases the history of peptic ulcer long antedates other symptoms of hyperparathyroidism, while in other cases the reverse is true. One author postulates that "the tendencies to develop peptic ulcer and parathyroid adenomas are sometimes inherited together, rather than to theorize an etiologic relation between the two conditions." Cope has stressed the diagnostic significance of peptic ulcer and urges that hyperparathyroidism particularly be sought whenever peptic ulcer occurs with unusual

TABLE 2
CLINICAL SUMMARY

<i>Case No.</i>	<i>KUMC Hosp. No.</i>	<i>Age</i>	<i>Sex</i>	<i>Race</i>	<i>Date of Dx.</i>	<i>Skeletal Sx.</i>	<i>Renal Sx.</i>	<i>G.I. Sx.</i>	<i>Hypercalcemic Sx.</i>	<i>Mean Serum Ca. meq/l</i>	<i>Mean Serum P. meq/l</i>	<i>Alk. Phosphatase*</i>	<i>%TRP</i>
1	51-33166	27	M	W	1951	+	+	+	+	7.5	1.1	12.3	0
2	56-2896	70	F	C	1956	0	0	+	+	6.9	1.2	1.8	0
3	58-12439	48	F	W	1959	0	+	0	0	7.1	1.0	1.4	0
4	54-8415	57	F	W	1959	+	+	+	0	6.3	1.7	6.1	0
5	57-8804	46	F	C	1959	0	0	+	+	6.2	1.3	2.8	66
6	59-17449	50	F	W	1959	+	+	0	0	7.2	1.2	4.2	87
7	60-2482	50	F	W	1960	+	0	0	0	6.8	1.0	0	0
8	46-6266	42	F	C	1960	0	+	0	0	7.8	1.6	2.5	85
9	61-1881	52	M	W	1961	0	+	0	0	6.7	1.3	1.6	73
10	58-2223	51	F	W	1961	0	+	0	+	6.1	0.8	0.9	86
11	53-10042	73	M	W	1961	0	+	+	0	7.3	1.4	2.8	76
12	61-16885	35	M	W	1962	0	+	+	0	5.8	1.6	3.0	76

+ Indicates present; 0 absent or not performed; Sx. symptoms; Dx. diagnosis.

* In millimol units.

symptoms or in unusual circumstances such as in young women.

The peptic ulcer associated with hyperparathyroidism is quite often refractory to usual medical management, and as emphasized by Rogers and Waife, may be made even worse by treatment with large quantities of milk and alkali. On the other hand, some peptic ulcers seen with hyperparathyroidism will become quiescent and remain so following removal of the parathyroid adenoma.

Vague abdominal pain which is not characteristic of the pain of peptic ulcer or pancreatitis, and for which often no apparent cause can be found, is seen in hyperparathyroidism. It is thought that such pain is due to hypercalcemia per se. This pain is often poorly localized and of such vague nature that it is written off as being due to psychoneurosis. Three of the patients in this series (cases No. 2, 4 and 11) complained of such abdominal pain, and were relieved of such following removal of their parathyroid adenoma.

Anorexia, nausea and vomiting, and constipation are also seen in hyperparathyroidism, and may or may not be associated with a demonstrable cause. It is likely that they also are most often due to hypercalcemia. Three of our patients (cases No. 1, 2 and 4) exhibited significant anorexia or nausea and vomiting which was poorly explained. Nine patients complained of moderate to severe constipation, which was corrected in varying degrees by removal of their parathyroid adenoma.

Cope and associates have repeatedly called attention to the significant coexistence of various forms of pancreatitis and hyperparathyroidism. In a recent review of 62 patients with concomitant pancreatitis and hyperparathyroidism, at least 40 of the patients (64 per cent) had symptoms of pancreatitis before the diagnosis of hyperparathyroidism was made. Thus in this series the symptoms of pancreatitis might have been a clue to the earlier diagnosis of hyperparathyroidism.

In at least 80 per cent of cases of pancreatitis associated with hyperparathyroidism, pancreatic calculi can be demonstrated either radiographically or pathologically, and can be seen in patients in the absence of urinary calculi and of bone changes. In hyperparathyroid patients the depression of serum calcium levels to normal or to levels not consistent with those expected in pancreatitis, is well documented and should alert the physician to the possible coexistence of these two diseases.

One patient in our series (case No. 5) had chronic pancreatitis with numerous acute exacerbations and had marked pancreatic calcification. The patient had developed steatorrhea over a period of two to three years and pancreatic insufficiency was quite severe before the diagnosis of hyperparathyroidism was finally made. A single adenoma was found at operation.

Hypercalcemic Symptoms

Symptoms of hypercalcemia, while not unique to hyperparathyroidism, when looked for are often sig-

nificant and may be the only overt manifestation of the disease. Keynes states that 15 per cent of patients with recognized hyperparathyroidism fall in this category. These symptoms of hypercalcemia are usually of little value by themselves in suggesting the diagnosis of hyperparathyroidism as they closely resemble purely functional states. Indeed it seems that the diagnosis of hyperparathyroidism from hypercalcemic symptoms alone usually involves considerable serendipity. The intensity of the symptoms varies directly with the degree of hypercalcemia, and in patients with only moderate elevations of serum calcium they may be minimal or absent. Symptoms of hypercalcemia include muscular weakness and atony, lethargy, malaise, bradycardia, polydipsia and polyuria. Gastrointestinal symptoms of vague abdominal pain, anorexia, nausea, vomiting and constipation are also thought to be due to hypercalcemia and have been mentioned previously in the report.

Muscular weakness and atony were significant findings in three of our patients (cases No. 1, 5 and 10) and three patients complained of lethargy and easy fatigability (cases No. 1, 2 and 10). Polydipsia and polyuria were seen in three patients (cases No. 1, 9 and 10) and one of these patients (case No. 9) was found to have a urinary output well over 5 liters per day.

In patients with severe hypercalcemia, a rather dramatic syndrome may be encountered, variously described as parathyrotoxicosis, acute hyperparathyroidism, parathyroid storm, or hypercalcemic crisis. "Hypercalcemic crisis" is probably the best term to describe this syndrome as an essentially identical picture is seen with any disease in which there is a markedly elevated serum calcium. Typically this is an acute fulminating illness characterized by anorexia, persistent vomiting, abdominal pain and profound muscular weakness, leading within a number of hours or a few days to dehydration, oliguria, azotemia, coma and death. None of the patients in this series exhibited this phenomenon.

Snapper has pointed out many neuropsychiatric manifestations of hyperparathyroidism. Similar symptoms can be seen in other hypercalcemic states. These symptoms may include apathy, agitation, paranoia, depression or psychosis with delusions and hallucinations. Only one of our patients (case No. 4) exhibited any symptoms of neuropsychiatric imbalance which could be related to hyperparathyroidism.

Laboratory Diagnosis

Although roentgenographic findings of various skeletal changes, renal and pancreatic calcifications may be found which are compatible with those seen in hyperparathyroidism, the ultimate diagnosis in any patient depends upon demonstration of certain biochemical abnormalities.

Serum Calcium

The classic biochemical alterations of this disease were described 32 years ago; they are hypercalcemia, hypophosphatemia, hypercalciuria and hyperphosphaturia. Among these, hypercalcemia has remained by far the most constant finding, and without it the diagnosis must certainly be questioned. The degree of hypercalcemia may be quite minimal. As emphasized by Keating, when the mean serum calcium is within a fraction of a milliequivalent of the normal values, it is not surprising that one or more of multiple determinations may be entirely within the normal range, since some random variation in calcium determinations occur in the best of laboratories. Therefore, repeated serum calcium determinations over a period of time are often necessary to establish the significance of isolated minimal abnormalities in suspected cases.

Patients with minimal hypercalcemia might at first thought be expected to have minimal symptoms and findings of hyperparathyroidism. However, this is not necessarily the case. Keating reported a series of 52 patients with minimal hypercalcemia, 46 of whom had nephrolithiasis which could be attributed to their hyperparathyroidism.

The elevation of total serum calcium has by most investigators been considered due to an increase in ionized calcium in the serum. Recently a method for measuring the ionized calcium fraction has been developed. It has been theorized that the finding of an increase in ionized calcium in patients with minimal elevation of total serum calcium would offer an advantage in diagnostic criteria. Support exists both for and against this theory, but most investigators now agree that fractionization of serum calcium offers no advantage in diagnosis over determination of total serum calcium.

All 12 patients in our series exhibited elevated preoperative mean serum calcium values. Mean values ranged from 5.7 to 7.5 meq/liter (normal values at the institution range from 4.5 to 5.5 meq/liter with three standard deviations being plus or minus 0.2 meq/liter). Individual determinations ranged from 5.3 to 9.2 meq/liter.

Serum Inorganic Phosphorus

Depression of serum inorganic phosphorus is usually the case in hyperparathyroidism but is not indispensable in arriving at the diagnosis. Also, serum inorganic phosphorus levels are elevated in hyperparathyroid patients with azotemia, thus making this generally a less useful test. Determinations of serum inorganic phosphorus were within the normal range in 60 per cent of a series of hyperparathyroid patients reported by Gordan and were within the normal range in 41 per cent of non-azotemic patients in another large series. However, other investigators con-

tinue to emphasize hypophosphatemia as an essential clue to the diagnosis.

Normal adult values for serum inorganic phosphorus at this institution range from 1.5 to 2.5 meq/liter (with three standard deviations being plus or minus 0.17 meq/liter). Mean values were below the normal range in nine of our patients (75 per cent), while they were within the normal range in the remaining three patients.

Urinary Calcium

Excessive urinary excretion of calcium is usually found in hyperparathyroidism but there are occasional exceptions that are not explainable. The Sulkowitch test, a rough qualitative measure of urinary calcium concentration has long been recommended as a screening test for hyperparathyroidism, but is considered by recent investigators to be too non-specific and difficult to interpret. Most clinicians now rely on quantitative determinations of urinary calcium with the patient on a restricted calcium diet such as that described by Bauer and Aub. Even so, the diagnostic usefulness of hypercalciuria is limited because of the fact that it is frequently observed in patients who are stone-formers and do not have hyperparathyroidism, and in patients with hypercalcemia from other causes.

Only a few random cases in our series were subjected to quantitative measurements of urinary calcium excretion and therefore no conclusions can be drawn from them.

Urinary Phosphate Excretion

One of the major effects of parathormone on the kidney is the impairment of phosphate reabsorption by the tubules. In an attempt to utilize this abnormality as a diagnostic test in hyperparathyroidism, a procedure known as tubular reabsorption of phosphate (TRP) has been developed. In a large series of normal subjects on regular diets, Chambers found that TRP values varied between 78 and 90 per cent, while values were lower in patients with hyperparathyroidism. Other investigators have found that TRP is within the normal range in a significant number of patients with hyperparathyroidism. It has been emphasized that normal TRP values in hyperparathyroid patients on a normal diet may be due to a poor intake or absorption of phosphate, and that a phosphate load (3,000 mg. of phosphorus daily for three days) uniformly depresses TRP values in hyperparathyroid patients. This same phosphate load does not greatly modify the TRP of normal subjects.

Low TRP values have been reported in patients with Cushing's syndrome, hepatic cirrhosis, renal insufficiency, sarcoidosis, various renal tubular syndromes, nephrolithiasis and hypercalcemia due to causes other than hyperparathyroidism. Thus the use-

fulness of TRP purely as a differential diagnosis procedure is somewhat limited.

TRP was determined in seven of the cases in this series. In four patients the values were below the lower limit of normal (78 per cent) determined by Chambers. In the other three patients the TRP values were above 78 per cent.

Miscellaneous Diagnostic Procedures

The intravenous administration of calcium to normal subjects has been shown to produce a reduction in serum phosphate level while hyperparathyroid patients show little or no response. However, other investigators have found this to be an unreliable response, and it may be seen in hypercalcemic states regardless of etiology. It is not of value in the diagnosis of hyperparathyroidism.

Large doses of cortisone or similar steroids have been found effective in significantly reducing the hypercalcemia of such nonhyperparathyroid states as multiple myeloma, sarcoidosis, hypervitaminosis D, thyrotoxicosis, and certain cases of carcinoma. There have been only a few isolated cases reported where such a reduction of hypercalcemia has occurred in hyperparathyroid patients. Thus, a decrease in hypercalcemia with the use of cortisone may be used as fairly certain presumptive evidence against the presence of hyperparathyroidism.

Recently a method for isolation of pure parathyroid hormone has been developed by Rasmussen. Although it has not yet been done, the possibility is intriguing that the technique of immunoassay will be applied to parathyroid hormone. Such an assay may some day be a significant adjunct to the laboratory diagnosis of hyperparathyroidism.

Differential Diagnosis

Since the ultimate diagnosis of hyperparathyroidism is in most cases dependent upon the demonstration of hypercalcemia, other causes of increased serum calcium must be excluded. *Table 3* lists the most common causes of hypercalcemia in order of relative frequency.

It must be kept in mind that occasional reports exist of patients who simultaneously had in addition to hyperparathyroidism, sarcoidosis, myeloma, and metastatic carcinoma.

TABLE 3

CLINICAL CAUSES OF HYPERCALCEMIA

Malignant disease	Milk-alkali syndrome
with osseous involvement	Hyperthyroidism
without osseous involvement	Hypervitaminosis D
Hyperparathyroidism	Acute osteoporosis of disuse
Sarcoidosis	Paget's disease

Conclusions

Hyperparathyroidism is a disease which is becoming diagnosed with increasing frequency in recent years. It is a disease in which the frequency of diagnosis is directly proportional to the degree of awareness of its symptoms and to the thoroughness of investigation by the physicians involved. Hyperparathyroidism should be suspected and investigated in a patient with any of the following conditions:

1. Symptoms referable to the skeletal system or x-ray findings of osteolytic or demineralizing skeletal disease.
2. Symptoms of urinary calculi or x-ray findings of urinary calculi or nephrocalcinosis.
3. Recurrent urinary tract infections.
4. Symptoms of peptic ulcer.
5. Symptoms of pancreatitis or x-ray evidence of pancreatic calcification.
6. Vague unexplained abdominal pain, anorexia, nausea, vomiting or constipation.
7. Complaints of muscular weakness, lethargy and easy fatigability.

8. Unexplained polydipsia and polyuria.

9. Neuropsychiatric disturbances in previously well-adjusted persons.

Several laboratory diagnostic procedures are available for the diagnosis of hyperparathyroidism. The one laboratory test which has persistently been of value in the diagnosis, and is still the best screening test for hyperparathyroidism, is the determination of serum calcium levels. As stated so aptly by Keating, "The demonstration of hypercalcemia for which other causes are excluded is the sine qua non for the diagnosis."

Summary

A series of 12 proven cases of primary hyperparathyroidism diagnosed at the University of Kansas Medical Center during the past 12 years is reported. From an analysis of these cases and a review of the significant literature, the various clinical manifestations of primary hyperparathyroidism and the laboratory aids to diagnosis are discussed.

Editor's Note: References may be obtained by writing the JOURNAL, 315 West 4th Street, Topeka, Kansas, 66603.

KANSAS STATE BOARD OF HEALTH

TOPEKA, KANSAS

Division of Preventable Diseases—Division of Vital Statistics—Kansas Morbidity Incidence

Summary of Cases Reported in April 1963 and 1962

And cumulative totals for the first four months of 1963 and 1962

Diseases	April			January to April Inclusive		
	1963	1962	5-Year Median 1958-1962	1963	1962	5-Year Median 1958-1962
Amebiasis	18	14	4	42	23	23
Aseptic meningitis	—	—	*	—	4	*
Brucellosis	3	3	7	5	9	16
Cancer	261	270	420	1,148	1,153	1,420
Diphtheria	—	—	—	—	—	—
Encephalitis, infectious	—	2	2	2	6	9
Gonorrhea	251	141	152	951	681	704
Hepatitis, infectious	27	74	48	91	259	168
Meningitis, meningococcal	3	2	2	4	7	7
Pertussis	2	5	5	23	6	23
Poliomyelitis	—	—	—	—	—	—
Rheumatic fever	—	4	—	—	6	2
Salmonellosis	18	7	2	47	18	13
Scarlet fever	83	71	71	253	361	361
Shigellosis	2	4	5	15	7	12
Streptococcal infections	122	178	91	688	731	692
Syphilis	93	53	94	365	394	450
Tinea capitis	15	13	13	39	67	67
Tuberculosis	28	26	26	107	100	109
Tularemia	1	3	2	5	5	5
Typhoid fever	—	—	1	—	—	2

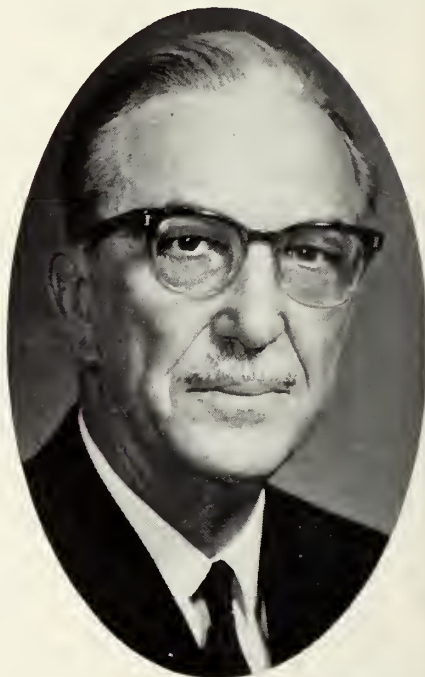
* Statistics on 5-Year Median not available.

The President's Message

DEAR DOCTOR:

During the convention of the American Medical Association in Atlantic City in June much emphasis was placed by AmPac on the political educational features of that organization, which will be promulgated during the next year. Here in Kansas a meeting will be planned for the early fall when the membership will be advised of these features.

Again, on August 20 a Coach-Physician Conference will be sponsored in Wichita. This was well attended and received last year and should be very worth while again for those who attend. It is also a good public relations effort.



H. St. Clair O'Donnell M.D.

President



Immediate Care of the Sick and Injured

A course entitled "Immediate Care of the Sick and Injured" will be presented September 26, 27, and 28 at the University of Kansas Medical Center. Sponsored by the Kansas Medical Society, the Kansas State Department of Health, and the University of Kansas School of Medicine, the classes will be conducted by senior faculty members of the medical school. One of the major objectives of the course is the orientation and training of paramedical personnel in the proper care of the patient before a physician's services are available.

Speaking for the Kansas Medical Society, H. St. Clair O'Donnell, M.D., president, said, "The physician has only recently realized that definitive care must begin at the scene of an accident rather than in the emergency room. Too often the physician must spend valuable time undoing the damage incurred transporting the victim. Therefore, we must see that the highest level of training possible is available to those people who are usually first at the scene of an accident. We strongly recommend that all paramedical personnel take advantage of this specialized training."

The course is designed for ambulance drivers, nurses, law enforcement officers, rescue squad members, and other paramedical personnel already involved in the immediate care and transportation of the sick and injured. These people, who are well-versed in advanced first aid, will receive even more specialized instruction.

In one special area of the course, instruction will center on transportation, traffic control, ambulance safety, and evacuation problems caused by mass casualties. Other areas covered in the first day of the course will include fractures of the spine and extremities, compound fractures, and injuries to the face.

The activities of the second day will include lectures on the breathing mechanism and respiration, chest injuries, and resuscitation. Circulation, shock,

blood loss, heart attack, cardiac arrest, and the dangers of cardiac massage will be the subjects of discussion during the last half of the morning. Sessions on head injuries, control and transportation of delirious and unruly patients, and eye injuries will conclude the day.

The first part of the final half day will include classes on normal childbirth, emergency childbirth, and hemorrhage associated with childbirth. The final section will deal with soft tissue injuries, drug addicts, poisoning, suicide, thermal problems, and diabetic coma and insulin reactions.

As a special part of the two and one-half days session, there will be two training demonstrations. They are on preparation and transportation of the injured and mouth-to-mouth resuscitation. The training sessions will be presented during the afternoon of the second day.

For further information or to register for attendance, write William E. Nelligan, Department of Postgraduate Medical Education, University of Kansas School of Medicine, Rainbow Boulevard at 39th Street, Kansas City, Kansas; or Walter M. Whitlow, Kansas State Department of Health, State Office Building, Topeka.

Medical Assistants 1963 Circuit Course

Medical Assistants from all parts of Kansas will be returning to the classroom as they attend one of four circuit courses to be held in August and September.

This year, courses will be held in Lawrence, August 10-11 at the University of Kansas; Dodge City, August 24-25 at the Silver Spur Lodge; Hays, September 7-8 at Fort Hays Kansas State College; and Wichita, September 14-15 at the Broadview Hotel.

The subjects to be covered and the participating

instructors were specifically requested by the Medical Assistants. Those attending this year will, as usual, have an opportunity to evaluate each course and instructor with an opportunity to make recommendations for subjects to be covered in future circuit courses.

An enrollment fee of \$25 per person will again be charged for the two day course which is sponsored by the Kansas Medical Society, the Kansas Medical Assistants Society, the University of Kansas Extension Department, and the Kansas State Board for Vocational Education.

A glance at the schedule to be followed and the course content indicates this will be a workshop in every sense of the word. The following program will be presented at each of the four sessions.

SATURDAY MORNING

- 9:00-10:00 a.m. Registration
10:00-11:30 a.m. "Records & Returns to Satisfy Internal Revenue Requirements"

Matthew H. Robben
Internal Revenue Agent-Instructor
U. S. Treasury Dept.
Wichita District

SATURDAY AFTERNOON

- 1:00- 2:00 p.m. "When the Medical Assistant Becomes a Collector"

George Fooshee, Jr.
President, Credit Adjustment
Company, Inc., Wichita

- 2:00- 3:30 p.m. "Insurance"

Will J. Miller, Jr.
President, Health Insurance Council,
Topeka

"Workmen's Compensation"

Frank Sabatini, Attorney
Examiner for Workmen's
Compensation, Topeka

"Blue Cross-Blue Shield"

Herman Skelton
Assistant Director, Physician
Relations, Topeka

- 4:00- 5:00 p.m. "Duties and Rights of Tax Payers in Case of an Internal Revenue Audit"

Matthew H. Robben

SATURDAY EVENING

- 7:00- 9:00 p.m. "Telephone Collections"
(Audience participation)

George Fooshee, Jr.

SUNDAY MORNING

- 9:00-10:00 a.m. "AAMA Study Outline No. 2"

Thomas P. Butcher, M.D., Emporia

- 10:15-11:30 a.m. "National Legislation and Individual Responsibility"

A. M. Edwards
Field Representative, American
Medical Association, Chicago

SUNDAY AFTERNOON

- 1:15- 2:15 p.m. "The Medical Assistant and Mental Health"

W. Mitchell Jones, M.D.
Medical Director
Prairie View Hospital, Newton

Walter Lewin, M.D.
Prairie View Hospital, Newton

- 2:30- 3:30 p.m. "Good Grammar"
(Audience participation)

Thomas P. Butcher, M.D.

1964 ANNUAL SESSION

The 1964 Annual Session of the Kansas Medical Society will be held in Topeka, Monday, May 4 through Wednesday, May 6. Exhibits and scientific sessions will be held at the Municipal Auditorium. The headquarters hotel will be the Jayhawk, where the officers, councilors and guest speakers will be housed.

This very early announcement is made to enable members to place these dates in their calendars and to plan even now to attend the 1964 Annual Session.

NEW MEMBERS

The JOURNAL takes this opportunity to welcome these new members into the Kansas Medical Society.

John F. Benage, M.D.
209 S. Main Street
Fort Scott, Kansas

William J. Cameron, M.D.

K.U. Medical Center
Kansas City 3, Kansas

Clarence B. Francisco, M.D.

3621 Wyncote Lane
Shawnee Mission, Kansas

Dean T. Gettler, M.D.
209 S. Main Street
Fort Scott, Kansas

James T. Good, M.D.
Mercy Hospital
Fort Scott, Kansas

Gertrude Ticho, M.D.
The Menninger Foundation
Topeka, Kansas



Book REVIEWS

SYNOPSIS OF PEDIATRICS, by James G. Hughes, M.D. C. V. Mosby Company, St. Louis, 1963. 1031 pages. \$9.85.

This is an excellent *Synopsis of Pediatrics*—in fact this is almost a textbook, and certainly is the longest and most voluminous synopsis I have ever read.

The above is not written as any adverse criticism as this should prove a very valuable book for anyone practicing any type or amount of pediatrics.

The entire Chapter 3 on Psychological Aspects of Childhood is excellently done and is capped with a very good summary. This 27-page dissertation on the many factors which influence children such as marital discord and its threat to security, parents providing for children what the parents didn't have, authority, rejection, spanking, and many other emotional situations is well done and worth the price of the text.

The chapter on Nutrition and Feeding is good and in much detail. The fact is pointed up that here in the United States the pediatrician is more often faced with the problem of overnutrition rather than undernutrition. I was quite disappointed in the lack of enthusiasm expressed for "breast feeding." Less than one page is devoted to this natural manner of feeding and a statement such as, "In the low income group of our population, the breast-fed infant has a better chance of survival," seems almost the left-handed compliment. I'm not really sure what the author thinks about breast feeding but believe he must feel indifferent.

Dr. Hughes has mentioned and then re-emphasized the need for a diagnosis and the need for thinking along the lines of altered physiology—what is this illness doing to the patient? This sort of medical thinking results in better therapy. Along the same line, the need for good history taking and re-examination of the patient is pointed out—too often these are forgotten or inadequately done. Dr. Hughes also suggests that we should listen more and improve our manners and attitude while interrogating. Perhaps Dr. Hughes has been watching the popular Ben

Casey too much, but this gentle reminder is perhaps worthwhile to some of us.

In Chapter 10 on Hematoma of the sternocleidomastoid muscle, I thought the therapy quite inadequate. Most of these require exercise of the neck and positioning of the head for many months. In fact it sometimes becomes a very difficult problem to encourage a not too courageous mother to carry out the exercises necessary to prevent a wry neck that will ultimately need surgery.

Chapter 21 by Dr. Crawford is "the most." This faces the problem of allergy squarely, suggests good thoughts on prophylaxis, advice for a patient work-up, and therapy. This also buries completely the old cliché "he is too young for allergy tests." As is pointed out, this is determined by history, examination, and severity of the illness rather than age of the patient.

I found the book excellent in discussing ear infections since it points up the need for myringotomy which is too often neglected.

I found the book disappointing when one is given the idea that if pes planus doesn't improve within a few months that an orthopedic opinion may be indicated. I'm not against the orthopedic consultation, but I just don't believe many feet will show improvement in three months.

The above are a few favorable and unfavorable comments on this *Synopsis of Pediatrics* but if you practice much pediatrics you should buy this book. It will prove a very good and yet quite thorough reference for the practitioner.—H.P.J.

SURGERY OF THE CHEST, by John H. Gibbon, Jr., M.D. W. B. Saunders Company, Philadelphia, 1962. 902 pages illustrated. \$27.

This volume consisting of 902 pages attempts to give a comprehensive presentation, including recent

(Continued on page 377)



Blue Shield

Past Eighteen Months' Blue Shield Progress Surveyed

The year 1962 and the first half of 1963 saw significant Blue Shield achievement in many areas. Promise of further progress in other directions was also anticipated.

The Rate Picture

Rates were increased in January, 1963. Generally, these were 60c per month increases for Schedule 2 and 3 families and a 50c raise for Schedule 1 families. The reason was increased use of benefits over a two-year period beginning in early 1961. During this time, a stable rate was maintained by withdrawing nearly \$800,000 from reserve funds. By the end of 1962, Blue Shield was spending \$1.07 for each \$1 of income, making it necessary to raise dues to continue present benefit levels. Blue Shield subscribers received the rate increase well and enrollment growth continued unaffected.

The Enrollment Scene

Total membership gained in 1962 was some 22,000. An additional 7,000 new subscribers were enrolled during the first four months of the current year. This resulted in an April, 1963, total of 585,000 Kansans having some form of Blue Shield coverage.

Of possibly greater importance was the success of efforts to upgrade present members from Schedule 1 to high benefit levels. Nearly 60,000 members upgraded to some form of more adequate coverage during the past 18 months. Most striking examples of upgrading were found in Schedule 3 counties where 49 per cent of all members now have high level Blue Shield benefits.

Much upgrading through optional benefit riders was also accomplished. More groups than ever be-

fore selected Major Medical plans, Extended Benefit Riders, supplemental accident coverage, and Out-Patient Laboratory Riders. For the first time, non-group subscribers were given the opportunity to select Diagnostic X-Ray Riders on an experimental basis in some Schedule 3 counties.

Schedule 3 Growth Continued

Upgraded service benefits in the form of the Schedule 3 program were approved by physicians in 57 additional Kansas counties during the past 18 months. This brought the 1963 county count to 68. Other local societies continued to study Schedule 3 and other ideas for local service plans.

Programs for the Aged Introduced

Last December marked the opening of a two-month enrollment in the Senior Citizens Plan. This program was made available through co-operative efforts of Blue Shield and Kansas Medical Society. Another approach to health programs for the aged was introduced this spring in the form of the Series 60 Plan, which is a Major Medical program especially designed for persons over 60.

Communications Improved

In the past year and a half Blue Shield tried harder to communicate more effectively with both doctors and the public. Blue Shield worked with Blue Cross in extending educational efforts through stepped-up activities in television and newspaper advertising. This was accomplished at a cost of little more than 28c per member per year.

Hopes are that better communication with physi-

cians has resulted from Blue Shield's monthly Report to Local Societies, a project that began with the present year. The Symposium at Wichita, held in March, was another innovation aimed at helping doctors to get facts about present prepayment problems.

Better Service Now Underway

The shift to electronic processing of claims and billings has been the major administrative project throughout the past 18 months. Routine Blue Shield claims are now processed entirely by new, high capacity electronics equipment. Billings for dues and membership records are now handled by machine. The conversion to computers has created many temporary inconveniences as best illustrated by recent delays in claims payments; however, this situation is now nearly corrected. Service should be much improved in coming months.

The future potential of Blue Shield electronics equipment to furnish data and statistics that will facilitate better evaluation of programs and fee schedules is promising. Also to be awaited is the time that computer assistance can be furnished to Kansas Medical Society and professional specialty groups in projects of interest to physicians.

A Challenge Met

Proposed bills to place more restrictive state governmental controls on both Blue Shield and Blue Cross were introduced in the 1963 session of the Kansas Legislature. These proposals were unsuccessful, largely due to the confidence of the medical profession and the lay public as illustrated by strong support when it became known that there was a possibility of unfavorable legislation. Nevertheless, further efforts at similar action can be expected in the 1965 Legislature.

Looking Ahead

The past 18 months has been a time of Blue Shield progress but solutions to major problems are still ahead. Better service and communication are needed and Blue Shield intends to work hard to secure these.

Public confidence in voluntary prepayment must be strengthened. The fact that a bill calling for increased state government supervision of Blue Shield reached the floor of the House of Representatives indicates—despite the bill's subsequent failure—that there is a need to increase efforts in public relations and member education.

Along with this, Blue Shield needs to redouble efforts to increase enrollment. To succeed will require being in a position to offer better programs with expanded service benefit features, especially in urban areas. In order to do this, more equitable fee schedules

must be developed and gaps in coverage closed. Blue Shield will seek to work with physicians to develop such programs.

In all, the next 18 months may be of the greatest importance to Blue Shield's future. It is hoped that the Plan can count on the continuing support of Kansas physicians during this period.

Book Reviews

(Continued from page 375)

developments, in a rapidly changing field of surgery. Thirty-five authors collaborated to present thirty-three chapters pertaining to different subjects related to thoracic surgery. Where many authors are involved in the presentation of a book one expects a variety of style and manner of presentation of material which is to be found in reading through this work. Some sections cover their subjects much more thoroughly than others, but for a field so extensive as thoracic surgery to be presented in one volume, the book does a masterful job of accomplishing its purpose. A surgeon who has not been trained to do thoracic surgery cannot expect to become a thoracic surgeon by referring to this book; however, the book will be a valuable aid to those interested in learning more about thoracic surgery and to thoracic surgeons themselves who wish to use this as a reference book and further follow-up material in the bibliographies of particular chapters. *Surgery of the Chest* can be recommended to surgeons and medical men alike since all aspects of thoracic disease have been considered and surgical technique itself is held to a minimum.—R M.B.

MSG, Safe Food Additive

The flavor enhancer, monosodium glutamate, "is one of the safest, most innocuous food additives," reports Philip L. White, Sc.D., refuting statements made in a recent book, *Strong Medicine*, by Blake F. Donaldson, M.D. This book states that MSG produces severe irritation of the gastric mucosa and implies that it may be carcinogenic. "The statement is erroneous," said the A.M.A. consultant. MSG has been used in very large amounts to treat disorders of the central nervous system with "no untoward effects." Furthermore, "the implication that monosodium glutamate irritates the wall of the stomach to a stage of acute congestion with the implications that this irritation may lead to cancer, is completely without basis." —Questions and Answers, *J.A.M.A.*, March 2, 1963.



Personalities—IN KANSAS MEDICINE

J. Walker Butin, Wichita, was certified to practice the specialty of Gastroenterology by the American Board of Internal Medicine after he passed the subspecialty board examination at Ann Arbor, Michigan, in March. Dr. Butin was elected to active membership in the American Gastroenterological Association at a recent meeting of that organization in San Francisco.

Ralph A. Seltzer, medical officer at Haskell Institute, Lawrence, has resigned to accept an appointment as medical officer in charge of a Public Health Service Indian Hospital at Lawton, Oklahoma.

George L. Thorpe, Wichita, has assumed duties as director of outpatient services at St. Joseph Hospital and Rehabilitation Center in that city. The announcement of the appointment stated that Dr. Thorpe will be responsible for establishment of an employe health program, supervision of the outpatient clinic and related outpatient services, and the emergency room.

Allen T. Stewart, Jr., will discontinue his practice in Valley Falls some time in August and will enter the University of Oklahoma at Norman to continue his medical study.

Frank A. Trump, Ottawa, again attended the postgraduate course given by the University of California of Los Angeles in Japan and Hong Kong. He studied two weeks in Japan and one week in Hong Kong. After finishing the course he and Mrs. Trump continued on a round-the-world tour by air. This is the second year Dr. Trump has taken this study-travel course in the Orient.

The Topeka City Commission recently approved the appointment of **William Lentz** to the Advisory

Board of Health. **William Nice** and **Floyd Beelman** were reappointed to the Board.

Certificates of Fellowship in the American College of Chest Physicians were conferred upon 275 physicians during the 29th annual meeting of the College held in Atlantic City in June. Physicians from Kansas who received certificates were **Yong Whan Kim**, Concordia, and **Kenneth L. Druet**, Salina.

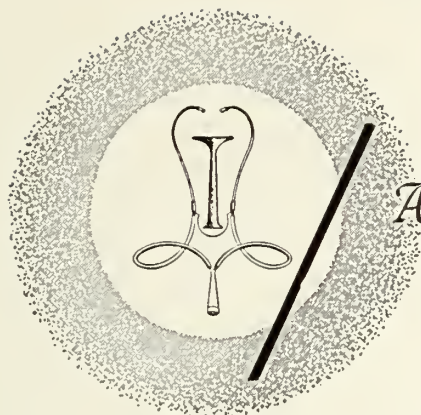
Otto Ravenholt, Topeka, city-county health officer, has resigned to become chief health officer of Clark County, Nevada.

St. Francis, Kansas, has the distinction of having three hometown physicians return to practice in that community. During recent years **Lucille Stephenson** and **Ernest R. Cram** have established their practices there, and Royce Walz, who has just completed his internship, is now associated with his father, **Thomas Walz**, in St. Francis.

Governor John Anderson has appointed **Thomas F. Taylor**, Phillipsburg, to the State Board of Health. Dr. Taylor will replace **Ralph Reed**, Lawrence, who resigned to take additional specialized study at the Mayo Clinic.

Charles Stephens, Minneola, left the first of July for a month in Africa where he will be working with a missionary physician at Chikombedzi Mission Hospital in Southern Rhodesia.

The appointment of **George F. Gsell**, Wichita, to the newly formed Kansas Research Foundation was announced by Governor John Anderson in July. The foundation is to coordinate research activities between state schools and will seek to attract research funds to Kansas.



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the DOCTOR'S CALENDAR. Notice of the session is posted in advance to allow the physician time to make preparations.

SEPTEMBER

- Sept. 5-7 American Association of Obstetricians and Gynecologists, Hot Springs, Va. Contact: Clayton T. Beecham, M.D., 3911 Vaux St., Philadelphia 29.
- Sept. 25-26 Congress on Occupational Health, San Francisco. Contact: AMA Council on Occupational Health, 535 N. Dearborn, Chicago 10.
- Sept. 26-28 American Association of Medical Clinics, Chicago. Contact: Robert S. Condie, M.D., 300 Homer Ave., Palo Alto, Calif.
- Sept. 27-
Oct. 5 American Society of Clinical Pathologists, Chicago. Contact: Eleanor F. Larson, Exec. Sec., 445 Lake Shore Drive, Chicago 11.
- Sept. 30-
Oct. 2 Kansas City Southwest Clinical Society, Kansas City, Mo. Contact: W. A. Slentz, M.D., 3036 Gilham Road, Kansas City 8, Mo.

OCTOBER

- Oct. 1-4 Animal Care Panel 14th Annual Meeting, Los Angeles. Contact: Joseph J. Garvey, 4 E. Clinton St., Joliet, Ill.
- Oct. 5-11 Annual Otolaryngologic Assembly—postgraduate and clinical program. Contact: Dept. of Otolaryngology, University of Illinois College of Medicine, 1853 W. Polk St., Chicago 12.
- Oct. 13-19 17th World Medical Assembly, New York City. Contact: The World Medical Assn., 10 Columbus Circle, New York 19.
- Oct. 21-22 *Unusual Forms and Aspects of Cancer in Man*—American Cancer Society, New York City. Contact: Dir. of Professional

Education, American Cancer Society, 521 W. 57th St., New York 19.

- Oct. 28-
Nov. 1 Annual Clinical Congress of the American College of Surgeons, San Francisco. Contact: American College of Surgeons, 40 E. Erie St., Chicago 11.

POSTGRADUATE COURSES

American College of Physicians postgraduate courses:

- Sept. 9-13 *Basic Mechanisms in Internal Medicine*, San Francisco.
- Oct. 7-11 *Recent Advances in Basic Mechanisms in Internal Medicine*, Ann Arbor, Mich.
- Oct. 21-25 *Common Problems in Endocrinology and Metabolism: Basic Concepts and Clinical Application*, Milwaukee.
- Oct. 28-
Nov. 1 *Allergy and Hypersensitivity States*, Chicago.

Registration forms and requests for information on the above courses should be directed to: Edward C. Rosenow, Jr., M.D., Exec. Dir., The American College of Physicians, 4200 Pine Street, Philadelphia 4.

- Oct. 14-18 *Recent Advances in the Diagnosis and Treatment of Diseases of the Heart and Lungs*—Washington, D. C. Contact: Murray Kornfeld, American College of Chest Physicians, 112 E. Chestnut St., Chicago 11.
- Oct. 21-25 *Clinical Cardiopulmonary Physiology*—Chicago. Contact: Murray Kornfeld, American College of Chest Physicians, 112 E. Chestnut St., Chicago 11.
- Oct. 24-26 Annual course in postgraduate gastroenterology, The American College of Gastroenterology, Washington, D. C. Contact: American College of Gastroenterology, 33 W. 60th St., New York 23.

AMA 112th Annual Meeting

Report on Actions of the House of Delegates

ENLARGEMENT OF THE Board of Trustees, the sections and scientific program of the AMA, interns and residents, a new Institute for Biomedical Research, a physician's pension plan and the relation between tobacco and disease were among the major subjects acted upon by the House of Delegates at the American Medical Association's 112th Annual Meeting held June 16-20 in Atlantic City.

Dr. Norman A. Welch of Boston, member of the House of Delegates since 1951 and Speaker of the House since 1959, was named President-Elect of the Association by acclamation. Dr. Welch will become President at the June, 1964, annual meeting in San Francisco, succeeding Dr. Edward R. Annis of Miami, Florida, who assumed office at the Tuesday night inaugural ceremony in Atlantic City.

The AMA 1963 Distinguished Service Award was voted to Dr. Lester R. Dragstedt of Gainesville, Florida, research professor of surgery at the University of Florida School of Medicine, for his achievements in the fields of education, research and practicing surgery.

Final registration figures at the meeting reached a grand total of 36,811, including 12,924 physicians.

Board of Trustees

The House adopted amendments to the Constitution and Bylaws designed to implement the recommendations presented in June, 1962, by the Ad Hoc Committee on the Board of Trustees. The changes will increase the size of the Board from 11 members to 15 members, by adding three elected trustees and including the immediate past president for a one-year term. The amendments also set the term of office for elected Board members at three years and limit the number of terms to three, for a maximum total of nine years service. In approving the amendments, the House expressed the opinion that enlargement of the Board of Trustees "would improve communications between the Board and the Association" and that the proposed changes "would be consistent with the increase in membership of the Association and with the increase of the size of the House of Delegates."

AMA Sections and Scientific Program

In considering the report of the Ad Hoc Committee to study the Board of Trustees Report on the Sections and Scientific Program of the AMA, originally presented at the 1962 Clinical Meeting in Los

Angeles, the House disagreed with some recommendations in both of those reports.

Major change was the House decision that all section officers—chairman, vice chairman, delegate, alternate delegate, secretary, assistant secretary and representative to the scientific exhibits—should be elected by members of the section and that no officers be appointed by the AMA Board of Trustees.

In another change, relating to nominations for specialty boards, the House approved the following recommendation: "The Committee of the Council on Scientific Assembly of the appropriate section shall nominate the AMA representatives to serve on the medical specialty certifying board. These nominations shall be submitted to the Board of Trustees."

In connection with section registration, the House decided that "a member of a section who desires to change his registration from one section to another because of a change in his specialty, shall be required to inform AMA Headquarters by written notice of this intention at least sixty days in advance of the Annual Meeting."

The House agreed with the Ad Hoc Committee's recommendation that the Section on Gastroenterology and Proctology be renamed the "Section on Gastroenterology" and that a separate "Section on Proctology" be established.

The House also commended the Board of Trustees for its recommendation that a national forum be sponsored by the AMA in which representatives of national medical specialty societies and the Academy of General Practice will participate. The Board of Trustees was directed to implement this suggestion as early as possible.

Interns and Residents

The House disapproved the report of the Council on Medical Service and the Council on Medical Education and Hospitals on Compensation of House Officers. In so doing, it adopted the following statement:

"We therefore recommend that in view of the overwhelming opposition to the basic proposal contained in the report of the Council on Medical Service and the Council on Medical Education and Hospitals, the AMA record itself as opposed to any system or program by which any part of an intern's or resident's salary is paid out of fees collected by the attending physician or out of fees collected under any type of medical-surgical insurance coverage."

The House, while declaring that the joint council report "represents a well-intentioned effort to find a solution to a most difficult, if not impossible, problem," recommended that any future proposals on the compensation of house officers be thoroughly studied by the Law Department and Judicial Council before submission to the House of Delegates.

In another action, related to the controversial "25 per cent rule," the House approved a revision of the Essentials of an Approved Internship which deletes the requirement for any stated proportion of foreign medical graduates and graduates of American and Canadian medical schools as an essential feature of any internship program.

New Research Institute

In acting upon two reports from the AMA Education and Research Foundation, the House approved the Foundation's announcement that it will establish and operate a new Institute for Biomedical Research.

The Institute will concern itself with intensive and fundamental study of life processes particularly as related to intracellular mechanisms. It will be composed of groups of dedicated, imaginative workers who are capable of significant scientific achievements through the interaction of their intellects and experiences, with unmatched facilities and maximum freedom from external pressures.

The Institute will be dedicated to pure, basic, non-disease oriented research, and it will not render medical service to patients and will not conduct a graduate training program leading to a degree. It is contemplated that the first research group should be functioning by early 1965.

Physicians' Pension Plan

The House approved establishment of an AMA physicians' pension plan under the provisions of the Self-Employed Individuals' Retirement Act of 1962, and noted that the Board of Trustees will make every effort to begin operation of the plan before the end of 1963 so that physicians will be able to participate this year.

The plan will be open to all AMA members and their employees who can qualify under the Act, Public Law 87-792 (Keogh Law).

The law allows a self-employed individual to set aside up to \$2,500 or 10 per cent of his annual income, whichever is less, in a retirement fund, with the first \$1,250 being deductible. The individual must provide proportionate benefits for any employee who works for him more than 20 hours a week and more than five months each year.

Tobacco and Disease

The House agreed with a Board of Trustees report which concluded that the AMA should defer any

definitive statement regarding the relationship of tobacco and disease. The report pointed out that the AMA is continuing its study of this important subject and is merely deferring any public pronouncement pending the availability of more information, including whatever may come from the study of a committee appointed by the United States Public Health Service.

In taking this action, the House declared that extensive research is still necessary for the complete answers on the cause and effect of many toxins, including tobacco. However, the House said that the AMA "has a duty to point out the effects on the young of the use of toxic materials, including tobacco, and these facts should be disseminated, particularly in our schools."

Miscellaneous Actions

In considering a wide variety of resolutions and reports, the House also:

Disapproved a Judicial Council opinion on the dispensing of glasses by ophthalmologists and reaffirmed the Council's interpretation of Section 7 of the Principles of Medical Ethics, as reported in the November 15, 1958, issue of the *Journal of the American Medical Association*.

Section 7 of the Principles of Medical Ethics of the American Medical Association states the following: "In the practice of medicine a physician should limit the source of his professional income to medical services actually rendered by him, or under his supervision, to his patients. His fee should be commensurate with the services rendered and the patient's ability to pay. He should neither pay nor receive a commission for referral of patients. Drugs, remedies or appliances may be dispensed or supplied by the physician provided it is in the best interest of the patient."

Approved a Judicial Council opinion on physician ownership of drugstores, drug repackaging houses and pharmaceutical companies. This also applies to Section 7 of the Principles of Medical Ethics. Under this ruling it cannot be considered unethical for a physician to own or operate a pharmacy provided there is no exploitation of his patient. It is unethical for a physician to have a financial interest in a drug repackaging company. It is unethical for a physician to own stock in a pharmaceutical company which he can or does control while actively engaged in the practice of medicine. These practices are contrary to the best interests of the public and the medical profession.

Approved of AMA participation in the recent formation of a Joint Commission on Medicine and Pharmacy.

Agreed with the Council on Legislative Activities that the House should take no official position on the

"Liberty Amendment" but should call it to the attention of individual physician citizens.

Disapproved of federal funds for staffing new community mental health centers.

Took a position opposing the student loan provisions of the Health Professions Educational Assistance Act of 1963.

Urged all state and county medical societies to adopt and activate all phases of "Operation Hometown."

Recommended that local medical societies in the vicinity of medical schools assume the responsibility of establishing and maintaining clear lines of communication with medical students.

Approved the organization of the new National Council for the Accreditation of Nursing Homes, jointly sponsored by the AMA and the American Nursing Home Association.

Adopted the recommendations of the Committee to Study the Joint Commission on the Accreditation of Hospitals and suggested that the committee's report be distributed to constituent and component societies and hospital chiefs of staff.

Approved an alteration in the Association Bylaws which states: "The Council on Medical Education and Hospitals shall consist of ten Active or Service members at least one of whom shall be a private practitioner of medicine who is not a faculty member of a medical school nor a member of a staff of a hospital associated with a medical school or university."

Commended the American Farm Bureau for its vigorous leadership in opposing unwarranted government interference and regulation.

Urged the widest dissemination to AMA members of a joint report by the AMA Council on Mental Health and the National Academy of Sciences-National Research Council on the Use of Narcotic Drugs in Medical Practice and the Medical Management of Narcotic Addicts.

Recommended that all AMA members and affiliates give strong support to the national tuberculin testing campaign proposed by the American School Health Association.

Directed the Speaker of the House to appoint an ad hoc committee to study the size, make-up and functions of the House of Delegates, its councils, sections and committees and to report its findings in June, 1964.

Election of Officers

In addition to Dr. Welch, the new president-elect, the following officers were named at the closing session on Thursday:

Dr. D. F. Ward of Dubuque, Iowa, vice president; Dr. Milford O. Rouse of Dallas, Texas, speaker of

the House, and Dr. Walter C. Bornemeier of Chicago, vice speaker.

Dr. Percy Hopkins of Chicago and Dr. Raymond M. McKeown of Coos Bay, Oregon, were reelected to the Board of Trustees for three-year terms. Dr. Robert C. Long of Louisville, Kentucky, was named to fill the one year remaining in the term of Dr. Hugh H. Hussey, who resigned to become director of the AMA Division of Scientific Activities.

Elected to the three new posts on the Board, created by the House action on Wednesday, were Dr. Dwight Wilbur of San Francisco, three years; Dr. Lester Bibler of Indianapolis, two years, and Dr. L. O. Simenstad of Osceola, Wisconsin, two years.

Nominated and elected to the Judicial Council was Dr. Walter Judd of Minneapolis, physician, former member of Congress and 1961 winner of the AMA Distinguished Service Award.

For the Council on Constitution and Bylaws, Dr. William D. Stovall of Madison, Wisconsin, was reelected, and Dr. Thurman B. Givan of Brooklyn, New York, was named to replace Dr. Bornemeier.

Elected to the Council on Medical Education and Hospitals were Dr. E. Bryce Robinson, Jr., of Fairfield, Alabama; Dr. Francis L. Land of Fort Wayne, Indiana, and Dr. Melvin Breese of Portland, Oregon.

To fill vacancies in the Council on Medical Service, the House elected Dr. Burns A. Dobbins, Jr., of Fort Lauderdale, Florida; Dr. Irvin E. Hendryson of Denver, Colorado, and Dr. Jess W. Read of Tacoma, Washington.

G. F. GSELL, M.D.

L. R. PYLE, M.D.

Kansas Delegates to
the A.M.A.

There's one thing about baldness: it's neat

—Don Herold

Manners are the shadows of virtue.

—Sydney Smith

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CHARLES A. BOYD, M.D.

Charles A. Boyd, retired Salina physician, died on June 8, 1963, at Grace Hospital. He was eighty-two years old.

He was born February 4, 1881, at Richmond, later moving with his family to Stafford. He was a graduate of Washburn University and received his medical degree from the University of Colorado School of Medicine in 1911. He began his medical career in Belpre in 1913, moving to Hutchinson in 1924 where he continued to practice until his retirement in 1959.

He was a member of the First Presbyterian Church and Rotary Club in Salina.

Survivors include his wife, a daughter and a son.

MILTON J. DUNBAR, M.D.

Milton J. Dunbar, 75, Winfield physician for 35 years, died in Newton Memorial Hospital on July 6, 1963.

Dr. Dunbar was born near Floral on December 6, 1887. He attended the Floral schools and taught school for six years before entering the University of Oklahoma School of Medicine. He received his degree in medicine in 1919.

He was a member of the First Christian Church, Masonic and Odd Fellows Lodges and the Lions Club.

Besides his widow, he is survived by a daughter and a son.

JOHN W. NEPTUNE, M.D.

John W. Neptune, 94, died on June 21, 1963, in Los Angeles, California. He had lived in the Los Angeles area since his retirement in 1940. Prior to that time, he practiced medicine in Salina.

He was born in Noble County, Ohio, on November 1, 1868, and came to Kansas in 1885. He received his medical degree from the Kansas City Medical College in 1894. He began his medical practice in Chapman, moving to Salina in 1900.

During his active years in Salina, Dr. Neptune was a member of the Masonic groups, the Lions Club, and the Chamber of Commerce. He was also a trustee of the Kansas Wesleyan University.

Dr. Neptune is survived by two daughters.

EDWIN H. TERRILL, M.D.

Edwin H. Terrill, Wichita physician, died on June 13, 1963, at the age of seventy.

He was born at Vandalia, Missouri, in 1893 and came to Wichita from Palmyra, Missouri, in 1928. He was a graduate of Washington University School of Medicine, St. Louis, having received his degree in 1918.

Dr. Terrill was a member of the First Methodist Church, Masonic Lodge and the Knife and Fork Club.

The Kansas Medical Society—1963-1964

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The Devil's Battered Children

The Increasing Incidence of Wilful Injuries to Children

JOHN R. CONNELL, M.D.,* *Denver*

VIOLENT PHYSICAL ABUSE of children by persons entrusted with their care has recently been acknowledged as a widespread infamy of startling frequency. Although the full magnitude of this detestable aggression will never be accurately known, the accumulating medical evidence is indictment enough to thoroughly shake the social conscience of our civilized nation. Physicians have indeed a moral responsibility for recognizing these injuries and for bringing them to the attention of appropriate local agencies. Without the determined support of the medical profession, it is unlikely that the present deplorable increase in child beating can be brought under any semblance of progressive control.

But before we can stand in defense of an assaulted child we must first entertain the suspicion. In the past twelve years many papers have appeared in medical journals suggesting a more critical attitude about childhood accidents. These reports have been illustrated with x-ray films of dramatic skeletal alterations, allowing the hasty reader to assume that angry abuse of an infant or young child characteristically results in massive periosteal proliferation. That extravagant

Physical abuse of children, sometimes overt but often concealed, has become a just concern of physicians and humanitarians from all avenues of life. Although the extent of this maltreatment can only be surmised, evidence is accumulating that its practice is widespread. Physicians, now fortified by nearly two decades of correlating the distinctive traumatic skeletal changes, can be highly successful in detecting the child under abuse. That difficulties exist in establishing guilt is evident from the three representative cases reported, two of which were from private practice.

A diagnostic gig, urging the physician to be curious about all childhood injuries, is presented.

By recommending temporary separation and rehabilitation of the family and its battered child, the physician may prevent further injury at a time when permanent damage or death may be the next dramatic chapter in the child's life.

* Read before the 104th Annual Session of the Kansas Medical Society, Salina, May 1, 1963. Dr. Connell is Director of Pediatric Service, Denver General Hospital.

osteogenesis often occurs in the reparative process, as described so admirably by Caffey, Silverman, and Fisher, is an accepted fact, but such radiographic findings are not essential for diagnosis of abuse. Less spectacular skeletal damage, i.e., simple fractures, avulsed metaphyseal fragments, and epiphyseal separations deserve equally thoughtful consideration if the physician is to grasp more realistically the true state of the family struggle.

A prompt verdict on his part of parental innocence or excusable oversight, may too often be in error. Adelson, in a 1961 paper titled, "Slaughter of the Innocents," described 44 childhood homicides in a single Ohio county over a 17-year period, remarking that it was probable that additional deaths listed as accidents were really homicides unprosecuted because of lack of witnesses. Kempe, Silverman, et al. reported in 1962 they had surveyed 71 hospitals and found 302 cases of beaten children recognized in one year's time; 33 of these children died and 85 others suffered permanent brain damage. Their report, which introduced the phrase "the battered-child syndrome," can be credited with stirring a nationwide medical interest in childhood abuse. The ghost is now out of the closet, and physicians must expect to find themselves increasingly involved in the multifaceted problem of child abuse.

Definition

In its most useful concept, definition of the battered child should include all degrees of violent person-to-child physical assault, and not just those in which bones or vital organs are damaged, or hospitalization required. Nor should the term be limited to a child whose aggressor admits inflicting the injuries. Confessions of this import are rarely made to the physician. In our experience, the majority of parents deny any knowledge of wilful trauma though they often recall falls in which the child—though seldom the adult—may have been injured. Not infrequently, a toddling sibling too young to talk is implicated; the impossibility of prosecuting such a defendant is obvious to everyone, including the parents.

Cases Illustrating Diagnostic Dilemma

Rather than describe cases in which abuse was not contested, I have chosen three that are representative but in which guilt has been denied. Names and identifying data have been sufficiently edited to protect all persons concerned. You may decide for yourselves which of these children—if any—was wilfully abused in the safety (?) of its home.

Case 1.

Mary was three months old, the first child of a happy young couple, when her mother tripped,

dropped her, and crashed down on top of her. Father was at work. Mary cried briefly but then seemed well the rest of the day. That evening as father was playing with her she cried again whenever her left knee was flexed. She was taken to Children's Hospital—this was not an indigent family—and x-rays revealed a triangular fracture involving the epiphyseal line at the distal end of the left femur (*figure 1*). In addition, Mary had several bruises on her face, attributed by the mother to bumps against the crib and the bath tub. This explanation for the bruises seemed so bizarre that additional x-rays were made. These disclosed a linear fracture of the right parietal bone thought to be several weeks old, damage to the proximal and distal epiphyseal plates of the right tibia with periosteal proliferation of the diaphysis (*figure 2*), a healed fracture of the left radius (*figure 3*), and some irregularity of the right radial head suggesting a healed injury at that point. When the parents were told of these additional "surprise" injuries, the only explanation they could offer was that each evening father gently put Mary through a physical workout to help her gain muscular strength. Since all four extremities and her skull had been fractured in the first three months of her transitory life, the Court ruled that father's physical fitness program was too Kennedian and placed her temporarily in a foster home. We see her now at Denver General Hospital and her injuries have stopped occurring.

That Mary's mother fell with her on at least one occasion, we do not doubt. Falls from a parent's arms or from a bed are the most frequently offered reasons for infants' fractures in our community. This child may not have been the victim of malicious assault but certainly the Court was correct in judging her parents unskillful guardians and in ordering a stay of execution from this physical fitness nonsense.

Case 2.

Billy was two months old when his mother tripped on the stairs, dropping him onto the cement floor. Father was at work. Because Billy had a swelling on the side of his head and a shrieking cry, his mother brought him for examination two hours (she said) after the injury. X-rays showed widely separated "bouncing baby" fractures of the left parietal bone (*figure 4*). Bilateral subdural hematomas were present, and these were tapped by the Neurosurgical staff until all fluid had been evacuated. After three weeks he was dismissed to the outpatient department. Seven days later, at the first follow-up visit, he was still improving and the head circumference was unchanged. At the end of the second week, his mother brought him back, convulsing. His head was now an inch greater in circumference and the fracture lines more widely separated (*figure 5*). There was a mas-



Figure 1. The triangular displaced metaphyseal fracture of the femur is shown. A second arrow points to the tibial nutrient artery foramenal area which might be confused with a site of injury.

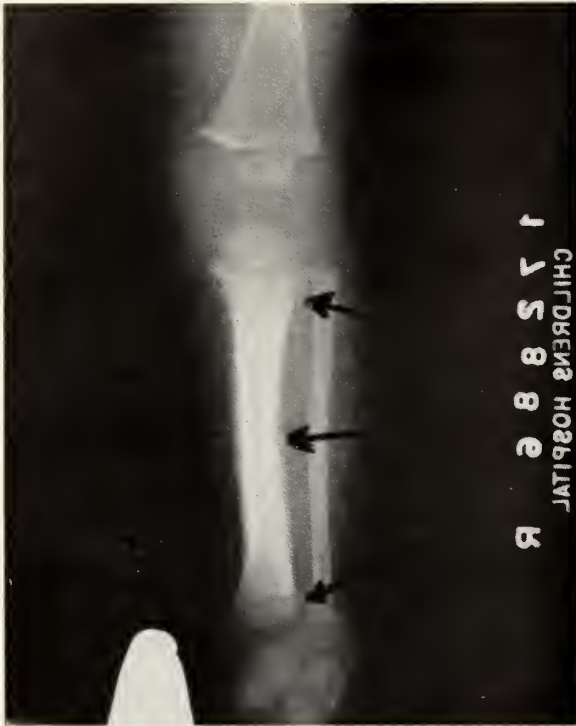


Figure 2. The right tibia with injury evident at both epiphyseal plates and along the shaft.

sive hematoma in the right subdural space; this was evacuated and he is recovering, though his developmental behavior is grossly retarded and he is mildly spastic. X-rays of Billy's long bones revealed only one other injury, a healing, displaced, untreated fracture of the left radius, and this may have occurred at the time of the original fall.

It may be of more than passing interest that Billy's first illness was severe salicylate intoxication at the



Figure 3. Evidence of injury to both radii is shown.

age of three weeks. At that time, he was admitted moribund, in extreme dehydration, anuric, and with several bruises on his face. His mother—who had three other children and might have known better—had given him “three or four baby aspirins” and some baking soda during the preceding twenty hours as treatment for fever and diarrhea. The blood salicylate level was 124 mg/100 ml. and the CO_2 content was 8.5 mEq/l.

Is Billy the victim of unintelligent mothering, of



Figure 4. The long, separated “bouncing baby” parietal fracture and a lesser fracture are seen.



Figure 5. Five weeks following the original injury the fracture lines are suddenly further separated.

the jealousy of a sibling who supposedly inflicted the facial bruises, of cyclic rage in a mother harassed by the problems of raising four small children—or is Billy the target of some aggressive force not known? Or might this simply be Billy's tough luck? Whatever the true explanation, the nearly fatal salicylate intoxication at three weeks, followed by the fractured arm and the brain damaging head injury on one or more occasions caused the Children's Protective Services of the Police Department to seek and obtain foster home custody for Billy, an action in which the parents were glad to concur.

Case 3.

Bruce was the first child of 19-year-old parents, and a breast fed baby whose mother was the daughter of a minister. At age two months he was brought to Children's Hospital with a soft, fluctuant swelling on his head. The parents said he had been well when they left him with a babysitter the evening before but noticed the swelling on his head when they got him up in the morning. X-rays disclosed a left parietal fracture (*figure 6*). On the chance that he might have received other injuries, the entire skeleton was surveyed and these lesions were found: traumatic separation of the right proximal tibia epiphysis and irregularity of the distal epiphysis indicating injury at that point (*figure 7*), a recent fracture of the left tenth rib posteriorly and calluses visible on the left sixth and seventh and the right second, sixth and seventh ribs (*figure 8*). When the evidence of multiple injuries at varying periods of time was presented to the parents, the father recalled one instance he had fallen while carrying the baby across some rocks during a trip to the mountains. It was recommended that Bruce be placed in a foster home following hospital dis-

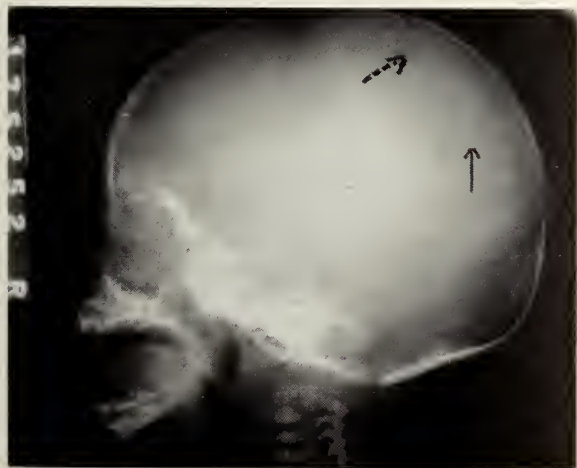


Figure 6. The right angled parietal fracture with minimal elevation is shown.



Figure 7. The damaged epiphyseal plates of the injured leg contrast sharply with the normal extremity.

missal but the parents plead so convincingly, the Court returned him to their supervised custody.

Two months later, when Bruce was four months old, he turned over in his crib and cried with pain. His parents noticed later in the day that his left arm was swollen and tender and took him to an orthopedist who found a spiral fracture of the left humerus. The orthopedist reported to the Court that in his opinion Bruce might have a mild type of osteogenesis imperfecta and that additional fractures could be expected.

Two more months went by and Bruce, now six months old, was brought on New Year's eve to the Emergency Room at Denver General Hospital after his parents found him convulsing in his crib. He never regained consciousness and died soon after arrival. X-rays revealed the healed fracture of the left humerus, a healed fracture of the first and seventh ribs on the left and of the right sixth rib (*figure 9*). History of recent trauma was not obtained until after the coroner's autopsy, and the story was this: Bruce had been sitting on the floor watching television when father's guitar, leaning against the davenport, was inadvertently bumped and fell against Bruce's head. Autopsy revealed a new fracture of the skull, diffuse intracranial hemorrhage, and marked cerebral edema. The guitar was not damaged.

In Bruce's six months on earth he had experienced at least four episodes of skeletal fracturing, the final blow associated with fatal brain injury. Coincidence? Negligence? Concealed abuse? There were no on-the-spot witnesses who would testify to having seen the child mistreated; the parents steadfastly denied any abuse; accidental injuries of the past had been ac-

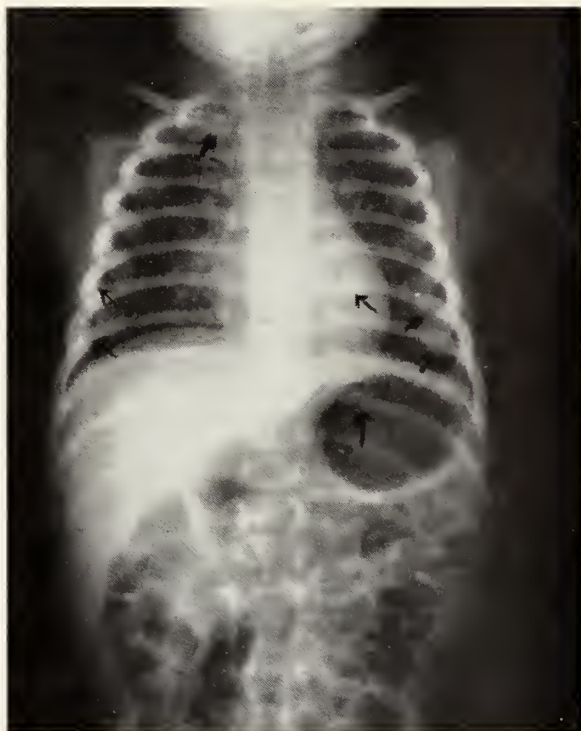


Figure 8. Multiple rib fractures of varying ages indicate trauma on at least two occasions.

knowledgeed in a manner considered not beyond belief; and an orthopedist had suggested a disease in which bones break more easily. Billy's parents are now living in another state where the accidents that were his lot are not known to the neighbors.

Discussion

In the past few years, physicians have become more curious about childhood injuries and are viewing certain ones with a raised eyebrow. Caffey⁶ in 1946 and Frauenberger in 1950 called attention to the suspect relationship between subdural hematoma and multiple fractures of the long bones, suggesting the etiology might be unrecognized trauma. Since then more searching inquiry has given strong support to this contention, and there are now known to be radiographic changes that have almost indisputable significance. Unfortunately, this distinction between radiographic truth and parental fabrication is not written on the x-ray film in language the court can always translate into prosecution. Nevertheless, much progress is being made, and the efforts of physicians and others to establish an identifiable portrait of the battered child are beginning to have an effect. The Colorado legislature has just made child abuse a reportable offense, and several other states are studying similar bills.

How can we tabulate useful guides for the detec-



Figure 9. Note how little evidence of the rib fractures remains excepting for the left first rib. The healed spiral fracture of the left humerus might also be overlooked.

tion of concealed physical abuse? Among many clues we believe curiosity about the following matters is warranted:

1. Contrast between history and findings. The story of a normal infant turning over in bed and breaking an arm or a leg makes one pause, to say the least. Multiple bruises in areas not likely to be injured by the infant are trail blazings of somebody on the war path.
2. Hostile parents with rejected children. This cause-and-effect relationship keeps tension in the home at a high charge, and abuses are common. Hostility may be well disguised, and overcompensation may be the screen behind which the parents hide. The lack of exhibited hostility should not throw the alert physician off guard.
3. Injuries causing metaphyseal "corner" fractures. These result from violence exerted about the joints; small fragments of bone are actually torn with their attached ligamentous fibres from the metaphysis. They may be seen immediately after injury and according to Caffey¹ occur in no other condition. Epiphyseal injury also is seen and is almost equally suspicious in early childhood.
4. Long bone periosteal proliferation, unexplained. Hypervitaminosis, infantile cortical hyperostosis, syphilis, scurvy and bone tumors are far less frequently the cause of periosteal new bone formation; trauma should always be first among the diagnostic considerations. The ease with which periosteum is sheared from the long

bones is a characteristic of childhood. Second films must be taken at least ten to fourteen days following injury if periosteal proliferation is to be demonstrated.

5. Differing ages of surprise skeletal damage. It is likely that the mistreated child has had previous thrashings, some of which may have left osseous evidence. A "first" injury in an infant or young child, especially if witnessed by only one person, dictates that x-ray films be made of the skull, ribs and long bones of the extremities. Focusing all attention on a single major injury permits past injuries to remain undiscovered.

6. Accident-prone infants, including burned, poisoned. Prior to locomotion infants are stationary targets, easy to strike. Injury, as from falls, may be evidence of negligent mothering, and a sign that the home is a hazard not a haven. Trauma attributed to hot coffee spillage, bath tub scalding, or overdosage of medication may be part of the portrait of the child at high risk.

7. "Bouncing baby" skull fractures and subdural hematoma. Blows to the head are common among the infant group. When dropped, infants are unable to right themselves in the air before landing. Because the rest of the body is usually protected by blankets or covered with clothing, the head becomes the unguarded target for an angry sibling or other assailant. Subdural hematoma was the first extra-skeletal injury of significance to be reported, and continues to be the most frequent finding of associated internal injury. All subdural hematomas must be accounted for, and purposeful injury excluded.

8. Unexplained convulsion, anemia, hematuria, jaundice, or ileus. To regard a seizure as idiopathic is taking the negative view. Trauma is a likely cause until proved otherwise. Skull x-rays are equally as important in this age group as blood sugars, serum calciums, electroencephalograms and other tests widely ordered. Anemia may result from internal or external blood loss or simple neglect, and needs more attention. Trauma to the abdomen may cause laceration of the liver, kidneys or spleen as surgery or autopsy prove. Injury to kidneys may produce transient hematuria, and hematuria otherwise unexplained needs to be regarded as traumatic. Jaundice due to concealed bleeding and perhaps to liver damage may occur. Hematoma of the bowel wall or within the mesentery, with or without peritonitis, may occur when whipping has included the abdomen.

9. Sudden death of the patient or a previous sibling. Bruce's death (Case No. 3) might be considered sudden, but most of these fall into the crib death category. Seemingly well the evening before, the child is found dead in the morning or following a nap. Skull fractures and brain injury are not uncommon findings even though there may be no external bruising. In all such deaths the brain should be examined and, in our opinion, x-rays made of the entire skeleton. Writing these children off as "suffocators" helps no one, least of all the next child in the family.

10. Extraordinary inquisitiveness and concern by the parents. In our experience, parents either visit seldom (some are in jail) or are overly solicitous and prying.

More needs to be known about them as a group and individually. The physician needs time for appraising them, for weighing the circumstances of the child's injuries, and for formulating his plan of action. No one can do this better than the family physician.

In the hope that the foregoing brief discussion may become a helpful reminder on the desk of the busy physician, the following acrostic abstract suitable for clipping is offered:

BE CURIOUS ABOUT

- | | |
|----------|--|
| C | ontrast between history and findings |
| H | ostile parents with rejected, neglected children |
| I | njuries causing metaphyseal "corner" fractures |
| L | ong bone periosteal proliferation, unexplained |
| D | iffering ages of surprise skeletal damage |
| A | ccident prone children, including burned, poisoned |
| B | ouncing baby skull fractures and subdural hematoma |
| U | nexplained convulsions, anemia, hematuria, jaundice, ileus |
| S | udden death of patient or previous sibling |
| E | xtraordinary inquisitiveness and concern by parents |

Addendum

Since presentation of this paper the mother of Billy (Case 2) has confessed to throwing him against his crib in moments of anger. Following the Court hearing and prior to his acceptance in a foster home, his mother called the Child Welfare worker "to come and get him before she killed him." He is now with a foster mother, awaiting placement in an institution for retarded children.

Acknowledgment

Appreciation is expressed to Dr. R. Parker Allen, Director of Radiology at Denver Children's Hospital for permission to use x-ray films of Cases 1 and 3 taken prior to their hospitalization at Denver General Hospital.

References

1. Caffey, J.: Some Traumatic Lesions in Growing Bones Other Than Fractures and Dislocations, *Brit. J. Radiol.*, 30:225, 1957.
2. Silverman, F. N.: Roentgen Manifestations of Unrecognized Skeletal Trauma in Infants, *Amer. J. Roentgenol.*, 69:413, 1953.

(Continued on page 399)

Preventable Mental Retardation

Preventable and Remediable Forms of Mental Subnormality

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Introduction

DURING THE PAST few years, increasing interest has been aroused in the plight of the mentally subnormal child. A physician bears no heavier burden than that of having to declare a child seriously subnormal and agree to the parents' request for institutionalization. If there is any possibility of forestalling such a tragedy, every effort must be bent toward recognizing as early as possible the preventable or remediable forms of mental subnormality.

It is the purpose of this paper to review briefly certain causes of subnormal mentality and point out ways of changing these conditions.

Pseudo-Retardation

It must always be borne in mind that the developmental landmarks that are generally agreed upon by psychologists are nothing more than statistical averages. Any single individual may reach these landmarks either very early or very late, the latter situation not necessarily representing a significant degree of psychomotor retardation. Very premature children may develop more slowly during the first year of life than others of the same postnatal age, but eventually be entirely normal. Not infrequently children who seem slow in their first two years of life catch up later without any sequelae and without any cause for this "slow" development ever being discovered. It is therefore important to look upon the entire development of the child as a dynamic progression and not necessarily as a series of plateaus which must be reached within certain time limits. As a rule, severe subnormality is not difficult to recognize, but in a borderline case a prolonged period of observation is essential to determine whether the child is truly retarded or only appears to be so.

A frequent cause of pseudo-retardation is severe chronic illness during the first two years of life necessitating long periods of hospitalization, repeated sur-

Advancing medical knowledge has provided an increasing number of established causes of mental retardation, many of which are preventable. Several of these latter groups have been enumerated.

Early recognition, by an alert and knowledgeable team of medical personnel, plus the application of an ever-growing roster of diagnostic tests, can both prevent mental retardation in an untold number of instances and preserve children from institutionalization.

gical procedures, special feeding and dietary regulations. Children who must be kept from the customary vital environmental stimuli of the home frequently appear subnormal. Many intellectually normal children who have suffered long hospitalization because of diseases such as infantile eczema or tracheo-esophageal fistulas may not be able to take steps at 12 months of age and may not speak more than a word or two until their third or even fourth year of life.

Hearing and visual defects are among the most common causes for pseudo-retardation. It is difficult to detect even quite severe visual impairment in infants, whereas hearing defects of significant proportion may go unnoticed still longer. On the other hand, totally blind or deaf children are usually easily recognized. Children with such severe impairment will not develop normally, and only too frequently psychological examinations fail to consider these factors. As a result of the psychologic examinations, upon which so much stress is laid, the child is often labeled as subnormal.

The child who fails to acquire speech at the normal age may not necessarily be retarded. A severe organic speech defect may be present or the child may have suffered an injury to the speech area of the brain that causes difficulty in acquiring this particular function. Such injuries do indeed occur without affecting the child's basic intellectual endowment.

* Read, in part, at the South Central Regional Conference, American Association on Mental Deficiency, Topeka, November 1962. Dr. Poser is Associate Professor of Medicine (Neurology) at the University of Kansas Medical Center.

Another group of children appears to develop normally but have difficulty in learning to read and write. Repeated neurologic and psychological examinations show no cause for this disturbance. However, more astute investigation of cerebral functions may reveal an incomplete degree of dominance. A child has trouble in reading or writing because all his training has been given on the assumption that he was right-handed, whereas he is basically left-handed. Such a case of mixed or incompletely established cerebral dominance requires no therapy except encouraging him to use the other hand more fully in order to establish which is the truly dominant one. As a rule such difficulties disappear within the first few months after the correct diagnosis has been made. A review of the family history often brings out the fact that close relatives of the child are left-handed.

There are also children who have severe psychologic and emotional disturbances, often as a result of disturbed home environments and lack of the usual care and affection. An important group is constituted by children with unrecognized or sub-clinical epilepsy. Such children may develop slowly, have difficulty in learning and appear to be dull without ever having had any clinically recognized epileptiform manifestations. Also, children with severe, poorly controlled petit mal or psychomotor epilepsy, who are isolated from normal activities because of their numerous epileptiform seizures, often develop abnormally. In addition to careful clinical examination, an electroencephalogram which shows some form of dysrhythmia may be extremely helpful. In a number of these children, the institution of proper anti-convulsant therapy results in a striking improvement of learning ability, behavior, and psychomotor development.

Preventable Forms of Mental Subnormality

Any child whose neurologic examination shows an abnormality should be investigated so that correctable lesions may be attended to either surgically or medically.

One such lesion is the premature synostosis, or early closure of the skull bones, which may prevent the normal development of the brain by restricting the intracranial cavity. Early operation, either removal of the sutures or morcellation of the calvarium, often allows normal cerebral development to take place. Children with this abnormality must be investigated by means of pneumoencephalography in order to find out if any other abnormality of the cerebrum co-exists with the premature synostosis. Another lesion is the chronic subdural hematoma, which when recognized is usually removed and may mean the difference between normal development and retarda-

tion. Certain types of brain tumors that cause hydrocephalus by obstruction of the ventricular system or compression of brain structures may be benign and removable. When these are suspected, a careful history and neurologic examination are very worthwhile. Too much emphasis cannot be placed upon early recognition and immediate therapy in cases of meningitis. Instances of congenital heart disease should also be completely investigated to see whether surgical correction of the defect is possible, since the poor oxygenation of cerebral tissues which result from the cardiac abnormality may eventually lead to cerebral damage and mental retardation.

Children with epilepsy form an extremely important group in which mental retardation and deterioration may be prevented. In most cases of simple epilepsy adequate anti-convulsant therapy will prevent secondary deterioration of the brain. The idea of "epileptic deterioration" was abandoned when it was realized that the intellectual deterioration so frequently observed in epileptic children was caused by the frequent episodes of cerebral anoxia which accompanied each convulsion. Since many children suffered trauma to the head during convulsions, such repeated cerebral injuries in turn contributed to the mental deterioration. It is a sad but well established fact that in every state institution in this country there are literally thousands of patients who might have led a fairly normal life had their epileptic disorder been adequately treated. There are, however, some instances in which the epilepsy itself is a symptom of a primary disease of the central nervous system which eventually manifests itself by mental retardation. In most instances, unfortunately, no treatment is helpful.

Certain children exhibit a peculiar form of epilepsy described as "salaam seizures" or infantile spasms, associated with an electroencephalographic pattern which has been called hypsarhythmia. Treatment with ACTH has prevented the mental deterioration which previously characterized many such children.

A number of inborn errors of metabolism are now amenable to treatment so that they no longer inevitably lead to mental subnormality. Once again, early diagnosis and therapy are essential. Phenylketonuria and galactosemia if diagnosed early enough, may be successfully treated by means of special diets. In hepatolenticular degeneration, special diets coupled with medication may be extremely helpful.

Although syphilis is no longer as prevalent as it was 30 years ago, cases of congenital syphilis still do occur and early treatment with penicillin may prevent later cerebral deterioration.

Even though we have no means now of treating the viral encephalitides that affect children, it is important to recognize that certain viral diseases such as the childhood exanthemata as well as immuniza-

tions against such diseases as smallpox and influenza, may be followed by inflammatory and demyelinating conditions of the central nervous system known as acute disseminated encephalomyelitis, acute leukoencephalopathy, or post-infectious encephalomyelitis. It is extremely important to distinguish between such conditions and actual viral encephalitides since the use of ACTH has been shown in a number of cases of leukoencephalopathy to prevent severe neurologic and mental deficits.

The concept of prevention of mental subnormality goes beyond recognition and treatment of neurologic diseases of children. It includes vigilance and caution with regard to prenatal development.

The recent tragic experience with the drug thalidomide coupled with the widespread knowledge of the effects of radiation and certain viral infections such as German measles upon the fetus and unborn child focuses attention upon the period of gestation. Great attention should be paid to all medications ingested by pregnant women. A wide study is currently being made under the direction of the National Institute of Neurological Diseases and Blindness to examine in detail all factors that may affect the development of the child during gestation and early infancy. This study will undoubtedly bring forth evidence of the existence of hitherto unsuspected agents which may adversely affect a child's brain in utero.

In a more controversial realm is the matter of eugenic counseling and family planning. Religious and ethical considerations must be weighed against the heart-breaking emotional situations and financial burdens of parents with a strong likelihood of producing severely defective children or those afflicted with a disease which will inevitably be fatal after a very short life span. Diagnosing many of the genetically determined diseases of the central nervous system can only be done after cerebral biopsies and careful post-mortem examinations are performed. Parents of children suspected of having such diseases are often loath to give permission for post-mortem examination unless they are aware that the advisability of having more offspring may depend upon such studies. In some cases, for instance in phenylketonuria, it is now possible to detect the carriers of the defective genes by means of chemical tests performed upon the blood. By extension, the problem of therapeutic abortions and sterilization of either or both parents must be faced in a realistic manner. Already laws have been passed in some states to permit carrying out such procedures on the recommendation of qualified physicians after the existence of certain well recognized genetically determined diseases has been demonstrated in their families. This form of prevention of mental retardation cannot be fully exploited until it is reviewed by religious and legal authorities. It is im-

portant, however, for the physician to take note that such considerations are indeed important in the prevention of mental subnormality.

Remediable Forms of Subnormality

Children may become intoxicated with drugs given for an illness and have as a resulting side effect a dulled intellectual ability. Probably the most frequent victims of this situation have been epileptics, who receive large doses of barbiturates and other anti-convulsants. In former days when bromides were in greater use such intoxications were fairly common. In such instances, fortunately, a change of medication results in almost immediate improvement. If it is recognized early enough, chronic lead intoxication may be corrected by the use of versenate. Children who have been developing very slowly because of this will after some time again function normally. Chronic malnutrition still afflicts a great many children whose minds as well as bodies fail to develop properly. This too can be reversible if treated in time. Certain rare disturbances such as pseudohypoparathyroidism give the appearance of retardation; if such cases are diagnosed soon enough appropriate treatment can remedy the situation. Proper treatment of diabetes will also prevent possible cerebral complications.

General Considerations

In most states it is only too easy to have children declared mentally retarded by a court and have them admitted to a state or private institution. Only a small proportion of such children have been thoroughly examined by competent physicians representing the various specialties concerned with the central nervous system and its diseases. The investigation of mental subnormality is not solely within the province of any one specialty. It seems criminal to have even a single child institutionalized before exhaustively studied by a team representing all medical and paramedical fields dealing with such problems. Pediatricians, neurologists, and psychiatrists can contribute to the evaluation of such children. Unfortunately, interest in the problems of mental retardation has varied considerably from area to area and from discipline to discipline, with more interdisciplinary jealousy than cooperation in evidence. In many cases well intentioned, but little informed, general practitioners succumb to social pressures and initiate application for institutionalization of a child who has received only a superficial screening.

When it is understood that the prevention and remedy of mental retardation is not only possible but

(Continued on page 399)

Eye Injuries

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THE BREADTH of the knowledge of the general practitioner is traditional and in keeping with his experience. It is our responsibility to improve that knowledge in depth. The subject that I have chosen to present this evening is traumatic diseases of the eye. Perhaps I can clear some of the dilemma that often presents as to the best management of eye injuries. In order that we may properly understand some of the problems involved I think it quite apropos to briefly review the anatomy.

Normal Anatomy

As you well know, nature has placed the eye within a bony orbit that protects it from large, blunt objects unless the force is sufficient to crush the orbit. Externally, it is protected from flying particles from above by a line of hair, the eyebrow, and from above and below by additional hairy structures, the lashes. These are attached to curtain-like structures, the lids, which reflexly close when any foreign object approaches them. In sagittal section from front to back, the parts of the eye we will consider are the cornea, the anterior chamber, the iris and ciliary body, the crystalline lens, the vitreous body, the retina, choroid and sclera, together with the optic nerve, which makes its exit from the posterior part of the eye.

I wish to consider the cornea in a little more detail because it is of considerable importance to us as general practitioners who see the eye first. The cornea is the clear window in the front part of the eye through which we see. It is covered anteriorly by the corneal epithelium that is continuous with the conjunctiva. Beneath this is Bowman's membrane covering a more or less homogeneous substance known as the corneal stroma. Posteriorly, the corneal stroma is limited by Descemet's membrane which is a true elastic connective tissue. This is covered on the posterior surface by the corneal endothelium. The thickness of the cornea is somewhat variable in different individuals, but averages about a millimeter in thickness. It is somewhat thinner at the center than it is at the edges. The transparency of the cornea is dependent on the maintenance of a proper water content of the cells making up the cornea. The epithelial and endothelial cell layers control this water content. Damage to either of these layers leads to either a drying out,

or an edema, resulting in loss of transparency to the cornea. It is a function of the lids in blinking to sweep the tears over the cornea and keep it continually moist. If one lid should be completely avulsed in an accident, the other should be sutured completely over the eye to keep the cornea from drying out.

The material in the anterior chamber is quite fluid

A review of some of the more common traumatic diseases of the eye with which general practitioners may have to deal. The treatment of these conditions is not discussed at length because it is more important that we have an understanding of the pathology involved in order to properly administer emergency treatment, and to know which cases to refer promptly.

and is known as the aqueous humor. It has an index of refraction identical to that of the cornea. The posterior and lateral portions of the anterior chamber are formed by a spongy, ring-like structure, the iris. This structure is faced on its posterior surface by two layers of pigmented epithelial cells which give it its color. External to the iris is the ciliary body which has to do with the formation of the intraocular fluid. Posterior to the iris is a crystalline lens which is held in place by the zonular fibers. The lens is a transparent semi-solid body and in the normal eye differs sufficiently in its refractive index from its surrounding medium to cause light rays entering the eye to be focused on the retina.

The area between the crystalline lens and the retina is occupied by the vitreous body. This is a highly transparent, jelly-like mass and contains no fixed cells, blood vessels, or nerve fibers. Surrounding the vitreous body, posterior to the ciliary body, is the light sensitive layer of the eye known as the retina which contains the rods and cones and a layer of pigmented epithelium. This, in turn, is surrounded by a layer of blood vessels which constitute the choroid coat. The entire eyeball, with the exception of the area occupied by the cornea and the area for the exit of the optic nerve, is surrounded by a tough fibrous membrane, the sclera. This is covered anterior-

* Presented at a meeting of the Anderson County Medical Society and the hospital staff at Garnett, Kansas.

ly, surrounding the cornea by a thin epithelial membrane, the bulbar conjunctiva.

We have arbitrarily given the types of trauma to the eye two general classifications; the non-perforating and the perforating injuries. The non-perforating injuries are further sub-divided into superficial injuries such as minor lacerations and superficial foreign bodies; burns, chemical and thermal; contusions to the eyeball, direct and indirect; toxins, local and systematic; radiant energy and electric shock.

I want to state here that it is quite important, especially in cases involving compensation, to check the vision and look at the fundus even in superficial injuries of the eye. Obviously the visual acuity of the eye before the injury cannot always be known, but it can usually be established whether or not there is a gross diminution in the vision. Sometimes what appears to be a purely superficial injury may have a perforating component which has led to intraocular hemorrhage or injury to the crystalline lens. So it is very, very important to check the visual acuity; if impossible when first seen, as soon as practicable. As further insurance against overlooking offending agents let me urge you, no matter how trivial the eye injury may seem, to evert the upper lid because you will often find neatly hidden there the cause of your client's discomfort and spontaneous acclaim for yourself.

Non-Penetrating Injuries

Abrasions of the cornea, whether involving a foreign body or not, are important from two aspects. A superficial injury involving Bowman's membrane may lead to scar formation and a local corneal opacity. An opacity situated in the center of the cornea leads to a diminution in vision. Also superficial injuries are apt to lead to infection of the cornea, or conjunctiva. Therefore it is important to handle these wounds as potentially infected and treat the eye with local antibiotics. Mild corneal lacerations heal quickly, often in 24 hours. It is our practice after removal of superficial foreign bodies to bandage the injured eye until the local anesthesia has worn off then remove the bandage and apply more antibiotic ointment, usually three, or four times daily until healed. We do not use penicillin ointment in the eye because we have learned the hard way that this often leads to local sensitivity and more trouble than was caused by the original foreign body, or laceration.

Deeper lacerations with severe photophobia and pain on movement of the eye may need to be kept bandaged for several days until partial healing has lessened these symptoms. A daily cleansing and irrigation of the eye with saline makes a grateful patient. The eye must also be bandaged properly so that there is no lid movement, or it is worse than no bandage at all.

Burns

Burns of the eye may obviously be mild, moderate or severe. Mild burns lead to very little permanent damage, moderate burns to more and severe burns may lead to loss of the eye. The initial treatment to all burns is the same, flushing the eye immediately with copious quantities of water, or preferably saline, in the attempt to remove as much of the irritating material as possible and as quickly as possible. Irrigation should be continuous, thorough, and last at least 15 minutes. Following this, if the nature of the caustic substance is known, specific treatment may be employed. Alkali burns are the worst and are progressive. Acid burns and thermal burns are not progressive. Burns from irritants such as tear gas are not progressive and heal readily. Following the copious irrigation of the eye to remove the irritant material, a bland oil such as castor oil, olive oil, or mineral oil may be put in the eye and repeated frequently to relieve irritation. Alkali burns require special attention. The time of irrigation should be doubled followed by careful removal of all particles of alkali and all tissue turned white from contact with the alkali because this tissue contains the alkali that will be released to destroy other tissue. All alkali burns and severe burns of other types should be promptly referred to an ophthalmologist following first aid.

Contusions

Contusions to the eyeball may set up a whole host of different changes, depending on the severity of the injury. These contusions need not be a direct blow. A blast injury, a fall on the head or blow on the head, or merely a severe jolt to some other part of the body may lead to detachment of the iris, rupture of the iris, a tear of the iris, hemorrhage into the anterior chamber, dislocation of the lens, rupture of the ciliary process, retinal hemorrhage, edema of the retina, contusion cataract or secondary glaucoma. A mild contusion to the iris merely results in a temporary mydriasis, a gross dilatation of the pupil which gradually subsides in 24 to 48 hours. Gross tears to the iris are usually accompanied by hemorrhage into the anterior chamber. A small hemorrhage in the anterior chamber is usually absorbed and leads to no serious sequelae later. A massive hemorrhage will fill the anterior chamber with clotted blood that will organize and cause the patient to become permanently blind unless it is washed out. Also massive hemorrhages in the anterior chamber may block the flow of the aqueous through the canal of Schlemm and result in secondary glaucoma. Rupture of the ciliary process is relatively rare and is usually accompanied by more severe injuries such as retinal hemorrhages, along with gross retinal detachment. Edema of the retina with or without retinal tear may accompany contusion to the eyeball. These injuries are sometimes

contra-coup, that is, on the opposite side to that of the blow. Small hemorrhages in the vitreous are absorbed without any great loss of vision. Massive hemorrhages, of course, lead to permanent damage and a corresponding loss of sight. The crystalline lens may be displaced either anteriorly or posteriorly in blows to the eyeball. This is usually accompanied by more or less hemorrhage and severe injury to the eye. Direct injury to the eye may result in what is known as contusion cataract, opacity of the lens due to direct injury to the lens.

Contusion injuries that are obviously severe should be referred promptly without treatment other than systemic treatment for relief of pain and shock. Minor contusions that will probably heal spontaneously should be placed on bed rest for 72 hours for observation and evaluation. The appearance of severe pain, loss of vision, increase or decrease of ocular tension are indications for immediate referral.

Chemical Injuries

Injurious chemical agents may reach the ocular structures through the blood stream or by absorption from direct contact. Absorption by direct contact is a rather common phenomenon. Severe anterior uveitis may result from plaster or lime in the eye. Caterpillar hairs have been known to invade the eye and produce iritis nodosa. Substances absorbed from the blood such as the toxins of diphtheria and botulinus may cause paralysis of the extrinsic ocular muscles. The drugs, naphthalene and ergot, may cause cataract. The salicylates and digitalis may cause simple disturbances of color perception. The injuries from tobacco and methyl alcohol are more severe, leading to loss of vision or even blindness. Lead triarsamide, quinine and optochin may be added to this group. These drugs, as with tobacco, lead to atrophy of the maculopapular bundle of fibers in the optic nerve and poisoning is suspected by the finding of a small central, or para-central area of blindness. Wood alcohol, on the other hand, attacks the whole optic nerve, often causing complete loss of vision. Treatment, of course, is prompt removal of the toxic substance and an attempt to preserve whatever vision may be left.

Radiation Injuries

The type and severity of the ocular damage produced by radiation depends on the wave length of the radiation, the length of the exposure, the amount of radiant energy absorbed by the tissues and the location in the eye where the absorption occurs.

Blindness has been known to occur from looking at the sun, usually at the time of an eclipse. In some cases this blindness has been permanent. Visible light is transmitted directly to the retina. The damage is due to the local absorption of the visible radiation causing a coagulation necrosis of the retina. The fire-

ball of an atomic explosion indiscreetly observed by the naked eye has been shown to literally burn a hole in the retina at distances up to 42 miles. The only treatment is prevention.

The longer infra-red waves are very strongly absorbed by the crystalline lens. If the radiation be sufficiently intense, definite injury results. This is the explanation for the development of cataracts in the eyes of glass blowers, steel puddlers and other workers whose occupations expose them to extreme heat.

The abiotic action of the shorter ultra-violet waves is concentrated on the cornea. An essential characteristic of the action of ultra-violet light is a latent period of some hours which elapses between exposure to the radiation and the reaction which it produces. The reason for this is not known. We only know that on numerous occasions we have been aroused from a sound sleep, about midnight, to treat an arc weld burn that occurred sometime during the day. After exposure to a large dose of ultra-violet light, a most intense and painful inflammation occurs with edema and congestion of the conjunctiva and roughening of the corneal epithelium that lasts for several days. No permanent damage is ordinarily produced, but the tissues remain hypersensitive to light, even to visible radiation for a long time thereafter. This clinical picture is quite familiar to us in snow blindness and arc weld burns. There is great variation in susceptibility to ultra-violet light. The intensity of radiation that will produce a violent reaction in one person may have very little reaction in another.

The treatment is the application of cold packs, some emollient preparation, such as petrolatum or castor oil in the eye, analgesics and sedatives to relieve pain until nature takes care of the damage. Topical anesthetics give prompt relief of the pain in the eye but slow down the healing process. A single application for relief of the initial severe discomfort may well be justified but prolonged use of an anesthetic ointment in treatment of an arc weld burn is not indicated.

The effects of radium, x-rays and neutrons on the eye are all similar. The latent period between exposure and reaction is even longer than with ultra-violet radiation. The effects are of two kinds; the so called normal or immediate reaction which occurs in one to three weeks after irradiation and the late reaction which follows from three months to two or more years after exposure. The earlier reactions are not unlike those produced by ultra-violet light. Hyperemia and edema with swelling and vacuolation of the cells, later death or proliferation depending on the dosage and the susceptibility of the individual cell types. The immediate reaction to small doses is very slight. After heavy doses, the whole cornea may become opaque. Cataracts are not uncommon after heavy irradiation and may be the result of excessive irradiation of the

tissue anywhere about the face. Less severe late reactions in the eye may be characterized by the abrupt onset of severe intractable glaucoma, massive intraocular hemorrhages or intraocular inflammation. There is no treatment other than palliative for these conditions.

The effects of electric shock on the eye are not well known. After a person has been struck by lightning, or after shock by a powerful electric current, cataracts are common. The cataract may develop with amazing rapidity, or after a long latent period of several months or years.

Perforating Wounds

We have chosen to divide perforating wounds of the eye into simple laceration, rupture of the globe, puncture wounds, and intraocular foreign bodies.

The process of healing in a perforating wound of the eye is much more complex than a similar process in other parts of the body. The process is complicated by the number of highly specialized tissues involved, the cornea, uveal tract, lens, retina and sclera. As has been noted before, Bowman's membrane has no regenerative powers, so the anterior lip of the wound is filled with the rapidly regenerating corneal epithelium. The corneal stroma heals by scar formation. On the posterior surface the endothelium is regenerated and usually secretes a new Descemet's membrane. The sclera and retina are relatively inert with the reaction arising chiefly in the richly vascular adjacent choroid. A clot usually fills the wound primarily followed by an abundant ingrowth of fibroblasts throughout the wound. Healing is by scar formation. Defects in the iris stroma due to wounds show no tendency to heal. The edges remain essentially unchanged for years. The ciliary body heals readily and has no tendency to scar. The lens shows insignificant attempts at healing. The wound in the capsule gapes, the lens fibers swell and undergo autolysis. If the wound is small, lens epithelium may grow across and eventually secrete a new portion of the capsule.

Lacerations of the eye involving only the cornea heal very rapidly and require no attention other than the use of atropine to dilate the pupil and bandaging with an antibiotic ointment to prevent infection. The loss of aqueous is no problem. The anterior chamber reforms promptly following closure of the corneal wound. If the anterior chamber is not reformed in 24 hours the case should be referred promptly. In deeper lacerations where there is a prolapse of the iris, the prolapsed portion must be excised. The follow up treatment is the same. Deeper lacerations involving the lens may lead to either absorption of the lens or formation of cataract. Very severe lacerations, of course, require early enucleation.

Rupture of the globe is the result of the direct application of blunt force to the eyeball. Rupture of the

globe invariably results in loss of the eye and requires early enucleation.

Puncture wounds that are small heal promptly. The depth of penetration is the most important factor particularly in relation to the injury of the crystalline lens. Infection may be introduced by puncture wounds and progress rapidly. Puncture wounds are of particular importance because of the secondary changes which may follow, cataract, infection and hemorrhage.

Foreign Bodies

Intraocular foreign bodies may be removable, not removable, metallic, non-metallic, or perforating. A magnetic, metallic foreign body in the anterior chamber can usually be removed without serious damage to the eye. A foreign body that penetrates the crystalline lens almost invariably results in the formation of a cataract. Foreign bodies that penetrate as far as the vitreous require great skill and accurate localization for removal. Retained intraocular foreign bodies vary a great deal in their toxicity. Gold, silver, platinum, crystalline rods, glass, plexi-glass and many other plastic materials are relatively well tolerated. Lead and zinc are less well tolerated. Iron, particularly soft iron, and copper oxidize rapidly with resultant siderosis and cuprosis. Limestone elicits a striking reaction. Vegetable matter is often accompanied by pyogenic organisms and leads to abscess formation. The double perforations of a through and through wound of the eye are usually accompanied by rather severe damage. The hemorrhage along the line of passage of the missile through the vitreous tends to organize, forming a dense, fibrous band between the two wounds. Contracture of this band completely distorts the globe.

Most perforating wounds of the eye, with the possible exception of small lacerations of the cornea, should be referred promptly to an ophthalmologist without treatment other than first aid and systemic relief of pain and shock. The application of antibiotic ointment in the eye may further complicate the situation with additional foreign material in the wound. The eye should be cleansed gently with saline, all obvious foreign material removed, the lid closed over the eye and bandaged.

Sympathetic Ophthalmia

No discussion of injuries to the eye is complete without a discussion of the sympathetic ophthalmia. Following perforating wounds to the anterior segment of the eye, if the injured eye is not promptly enucleated, bilateral uveitis develops in as many as 3 to 5 per cent of the cases. Enucleation of the injured eye within two weeks of the injury provides almost complete protection. If enucleation is performed within one week, protection is complete. After surgical wounds the incidence of the disease is

much less frequent. A frequency of one or two per thousand has been reported following cataract extraction and trephine operations. Following iris inclusion operations the incidence is appreciably higher, amounting to five to ten per thousand.

The clinical picture is that of a bilateral uveitis. The inflammatory reaction develops simultaneously in both eyes and proceeds slowly and relentlessly, apparently uninfluenced by conventional therapy. Heavy mutton fat corneal deposits are characteristically seen and the exudate has an extremely plastic character resulting in the early development of posterior synechia which are difficult, or impossible to break with mydriatics. In most cases the congestion and edema of the ocular and extra-ocular tissues is relatively light, but the aqueous is turbid, indicating an increased permeability of the intraocular vessels to serum colloids. Secondary glaucoma is a common complication. In the late stages of the disease exacerbations and remissions occur but eventually the inflammatory process tends to burn itself out. The use of the corticosteroids and ACTH have improved the clinical course of the disease, but the best treatment is still prevention. Twenty-five to 40 per cent of the cases retain useful vision in one eye.

A great deal of work has been done in an attempt to discover the etiology for this condition, but the issue still remains uncertain. The nature and location of the mechanical injury is of extreme importance in the causation of the disease, also a mild exogenous infection is probably a contributing factor. Allergy to the uveal tissue components appears to play a significant role, also. A combination of these factors and probably not any one of them alone is paramount in the production of this disease.

Preventable Mental Retardation

(Continued from page 394)

essential, the burden is upon the physician to make every effort to establish an accurate and specific diagnosis of each case. If a diagnosis of a preventable or remediable form of mental retardation can be made, it is imperative to begin treatment early. Furthermore, more realistic attitudes as well as laws governing eugenic counseling and family planning must be adopted.

There are still in our institutions thousands upon thousands of patients whose cases are listed as instances of unclassified mental retardation. Among them are an untold number whose mental retardation could have been prevented had physicians been wiser and more attentive.

References available from the author on request.

The Devil's Battered Children

(Continued from page 391)

3. Fisher, S. H.: Skeletal Manifestations of Parent-Induced Trauma in Infants and Children, *Southern Med. J.*, 51:956, 1958.
4. Adelson, L.: Slaughter of the Innocents, *N. Eng. J. Med.*, 264:1345, 1961.
5. Kempe, C. H., Silverman, F. N., Steele, B. F., Droegemueller, W. and Silver, H. K.: The Battered-Child Syndrome, *J.A.M.A.*, 181:17, 1962.
6. Caffey, J.: Multiple Fractures in Long Bones of Infants Suffering From Chronic Subdural Hematoma, *Amer. J. Roentgenol.*, 56:163, 1946.
7. Frauenberger, G. S. and Lis, E. F.: Multiple Fractures Associated With Subdural Hematoma in Infancy, *Pediatrics*, 6:890, 1950.

Publications on Child Protection are available from the Children's Division, The American Humane Association, P. O. Box 1266, Denver 1, Colorado.

TRAUMA AND CANCER

Blunt trauma cannot produce cancer, despite the recent rash of claims to the contrary, declares Dr. Carroll J. Bellis, Professor and Chairman, Department of Surgery, California College of Medicine, Los Angeles.

"There is absolutely no cause and effect relationship between an injury and the subsequent development of malignancy. Well-schooled cancerologists and textbooks of pathology repeatedly have stated that trauma cannot cause cancer, even if a patient thinks it can, and even if the lesion is in the region of a previous contusion or multiple contusions. A cancer found in such an area is not due to the injury, which merely has called attention to the pre-existing cancer. Development of a cancer in an area of ancient injury is coincidental and not the result of the injury," Dr. Bellis stated.

"Trauma as an inciting or aggravating mechanism does not have a place in cancer development, and schooled pathologists do not include injury as a mechanism by which cancer is initiated or stimulated," the author continued.

"There are no 'dormant' cancers. Any gross or microscopic inflammation or hemorrhage in a cancer removed from an area of previous injury is due to surgical manipulation, to the nature of the tumor, or to the injury," Dr. Bellis explained.

In conclusion he added: "The relation is untenable, and an allegation that a cancer has been caused by an injury should be unequivocally denied."

BELLIS, C. J.: Blunt trauma cannot produce cancer, *Industrial Medicine and Surgery* 32:124 (March) 1963.



C. P. C. ~

Progressive Disorder of Sensation and Movement of the Hands, Apraxia, and Euphoria

Case Presentation

THIS PATIENT WAS A 56-year-old white, married, right handed woman who was first admitted to Kansas University Medical Center on March 13, 1961. Her chief complaint was shaking of the left hand; swelling and pain in both hands; inability to write with the right hand; dropping objects from the left hand; and inability to release her grip. The patient had enjoyed good health until about two years before admission when she noted progressive disability to use her left hand. The hand would shake and she would drop things, and there was loss of sensation and swelling of the left hand. Cold objects were not appreciated and warm objects felt hot. At times she noticed difficulty in releasing objects which she had grasped with the left hand. In November, 1960, she noticed decreased sensation, numbness, and progressive disability to hold objects in the right hand. More recently she noticed stiffness of her jaws and difficulty opening her mouth.

The patient had had the usual childhood illnesses, but no serious adult illness, surgery, or fractures. Her mother died of pneumonia at the age of 80, and her father died of prostatic carcinoma at the age of 84. Four siblings are living and well. There was no history of neuromuscular disease or death from unusual disease. The patient had had pedal edema on standing since January, 1960. The system review was otherwise negative. Her blood pressure was 120/76, pulse, 80; respiratory rate, 20; and the oral temperature was 98 degrees. Nothing abnormal was found in the ex-

amination of the head, eyes, ears, nose, or throat. The neck was normal, and no bruits were heard. The first and second heart sounds were normal, and there were no murmurs. The lungs were clear. The abdomen was normal, and the liver, kidneys, and spleen were not palpable. The extremities were normal, and there was no edema. The gait and station were normal. The cranial nerves were intact. The deep tendon reflexes showed a slight hyperactivity on the left. The sensory examination was normal. There was questionable decrease of strength in the left hand with an increase of muscle tone. There was no ataxia. A Babinski sign was present on the left. Her sensorium was clear, but she was thought to be somewhat euphoric. She had apraxia for various commands including the following: "Close your eyes." "Open your mouth." "Write the numbers from one to ten." When asked to perform various movements with her extremities she was unable to do so. A grasp reflex was noted in both hands but was greater on the left. All laboratory values were obtained on the day of admission: the hemoglobin was 15.0 grams per cent; hematocrit, 42 ml. per cent; leukocyte count, 10,330 with 81 per cent neutrophils (80 per cent filamented and 1 per cent non-filamented), 14 per cent lymphocytes and 5 per cent monocytes. The pH of the urine was 7.5; specific gravity, 1.015. There was a trace of albumin but no sugar, and the microscopic revealed amorphous phosphates and 10-12 pus cells per high power field. The VDRL was nonreactive. The serum sodium was 142 mEq/L; potassium, 3.7 mEq/L; CO₂, 28 mEq/L; chloride, 105 mEq/L; calcium, 4.6 mEq/L; and phosphate, 2.1 mEq/L. The BUN was 13 mg. per cent; alkaline phosphatase, 1.3 mg. per cent; direct serum bilirubin, 0.1 mg. per cent; total serum bilirubin, 0.4 mg. per cent; cephalin cholesterol-

Edited by Jesse D. Rising, M.D., and Mahlon Delp, M.D., from recordings of the proceedings of the conference participated in by the departments of medicine, pediatrics, surgery, radiology and pathology of the University of Kansas Medical Center as well as by the third and fourth year classes of students.

ol, 1 plus; thymol turbidity, 8 units; serum albumin, 3.77 grams per cent; serum globulin, 2.24 grams per cent; total serum cholesterol, 224 mg. per cent with 66 per cent esters. The sedimentation rate was 15 mm. in 60 minutes.

A pneumoencephalogram was performed on March 14, 1961. The patient's hospital course was uneventful and she was discharged on March 17, 1961. She was followed in the outpatient clinic following discharge from the hospital until October, 1961. Her main problem was one of swelling of the left arm and leg. By October she had lost 40 pounds, and had a great deal of difficulty opening her jaw and swallowing. On October 15, 1961, she was brought to the emergency room at KUMC and pronounced dead on arrival.

Dr. Mahlon Delp (moderator): Are there any questions about the protocol?

Mr. Larry L. Morgenstern (student):* Was a cerebrospinal fluid examination done, and if so, what was the result of the analysis?

Dr. Robert F. Goodwin (resident): Spinal fluid was taken at the time of pneumoencephalography. There was no comment as to the pressure of the fluid, or of its clarity or color so I assume these were all normal. The tests for syphilis were negative, and the colloidal gold test was normal, showing a "two" in the midzone. There were some 45 red cells, and the protein was 30 mg. per cent.

Mr. Charles F. McElhinney (student): I'm wondering if this patient had any defects in her memory, judgment, or orientation?

Dr. Goodwin: She was oriented as to time, place and person, and she had no specific defects in memory.

Mr. George M. Kreye (student): Was there any history of convulsions?

Dr. Goodwin: No.

Mr. Don C. Dirks (student): Was the swelling she complained of ever found on examination?

Dr. Delp: Do you want to answer that, Dr. Waxman?

Dr. David Waxman (internist): That was purely a subjective complaint.

Mr. Morgenstern: Were there any fasciculations or atrophy?

Dr. Goodwin: None was mentioned.

Mr. Kreye: How severe was her euphoria?

Dr. Goodwin: It was only mentioned in the chart. I assume this was not very marked.

Mr. Dirks: Was there any loss of vision or peripheral field defects?

Dr. Goodwin: None.

Mr. McElhinney: Was the gag reflex present, and was there ever any nasal regurgitation?

Dr. Goodwin: The cranial nerve examination was normal, and there was no history of regurgitation of anything.

Dr. Delp: Dr. Ziegler, did you have something to say here?

Dr. Dewey K. Ziegler (internist): There was a clinical finding which I do not believe was mentioned. Not only did she have apraxia, but she had absolutely no ability to write.

Mr. Morgenstern: Did the patient have any fever or meningeal signs?

Dr. Goodwin: No.

Mr. Dirks: Was this patient able to open her mouth?

Dr. Delp: Dr. Manning, was she able to open her mouth?

Dr. Robert L. Manning (internist): Not at all.

Dr. Delp: That was three days before death. Now, before that time the woman did open her mouth.

Mr. McElhinney: Would you tell me the findings on funduscopic examination?

Dr. Goodwin: The examination was recorded as normal.

Mr. Morgenstern: Did the patient ever have headaches, vomiting, or nausea?

Dr. Goodwin: They were not recorded.

Mr. Kreye: She is reported to have been dead on arrival?

Dr. Goodwin: She came in by ambulance, gave one gasp between the ambulance and the emergency room, and that was all.

Mr. Dirks: What were the symptoms during the last few hours prior to coming here?

Dr. Goodwin: I believe a member of the family called in and said she was having some difficulty breathing, and they were asked to bring her into the emergency room immediately.

Mr. McElhinney: Did the patient recognize the presence of the right and left sides of her body?

Dr. Goodwin: It was not stated. I believe she did.

Mr. Morgenstern: Was there any urinary or fecal incontinence?

Dr. Goodwin: No.

Mr. Kreye: Is there any history of head trauma?

Dr. Goodwin: No.

Mr. Dirks: Was there ever any aphasia or agnosia?

Dr. Goodwin: That was not recorded.

Mr. McElhinney: Was there any history of exposure to toxins such as manganese?

Dr. Goodwin: No.

Mr. Morgenstern: Is it known whether the patient was able to calculate?

Dr. Goodwin: Poorly.

* Although a student at the time of the conference in January, 1962, he, like the others referred to as students, received the M.D. degree in June, 1962.

Dr. Delp: Thank you. Mr. Kreye, will you please demonstrate the electrocardiogram?

Electrocardiogram

Mr. George Kreye: The electrocardiogram made on March 14, 1961 (*Figure 1*) shows a regular sinus rhythm of 100 per minute. The P waves are peaked in leads II, III, and aVf. The P-R interval is approximately 0.16 seconds. The QRS complex vector is normal. The progression of the R wave across the precordial leads is normal. There is a questionable T wave abnormality in the precordial leads, and there is a RSR' complex in lead V4R. This is interpreted as a normal electrocardiogram.

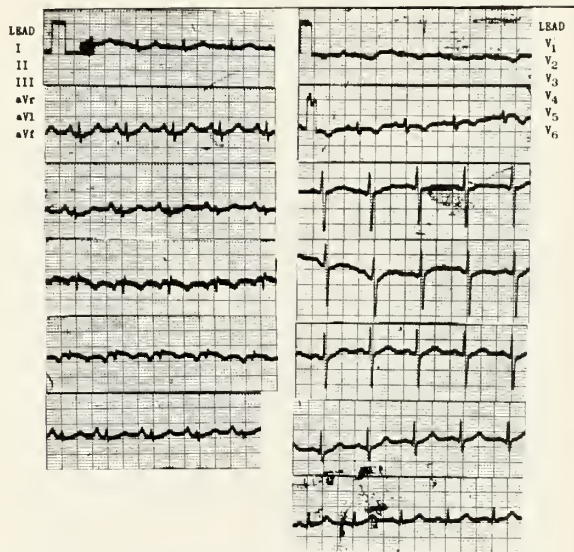


Figure 1. Electrocardiogram made on March 14, 1961.

Dr. Delp: Thank you. Dr. Dirks, please demonstrate the x-rays.

X-Rays

Mr. Don Dirks: These x-rays were all taken on March 14, 1961. X-ray of the chest shows no bony abnormalities. The heart is normal in size, and the lung fields are clear. I interpret this as a normal chest x-ray. The pneumoencephalogram done on March 14, 1961, shows a dilatation of the lateral ventricles with a suggestion of concavity in the area of basal ganglia bilaterally. There is no displacement or distortion other than the enlargement of the ventricles. The lateral view of the pneumoencephalogram (*Figure 2*) shows a decrease in size of the gyri with an increase in size of the sulci. The sella turcica is normal. I interpret these as showing cerebral atrophy.

Dr. Delp: Thank you. Mr. Morgenstern, please give us your discussion.

Mr. Morgenstern: My discussion will concern the precentral motor cortex, which includes the precentral gyrus, or Brodmann's area 4, the premotor area, or Brodmann's area 6, and area 44, commonly known as Broca's area. The discussion is based on a 56-year-old white woman with progressive bilateral neural involvement beginning on the left side, apraxia, euphoria, and marked weight loss leading to death in approximately two years. In keeping with the clinical method of neurology we will first attempt an anatomic diagnosis which best explains a bilateral progressive syndrome of sensory, motor and autonomic symptoms, reflex (or forced) grasping, apraxia, and euphoria—unmistakable signs of functional disturbance of the cerebral cortex.

Reflex grasping, hyperreflexia, and presence of a Babinski can be explained by a lesion in the premotor area, or area 6. Motor apraxia of the limbs is seen before the onset of paralysis in practically all cases of neoplasm involving the precentral gyrus. Motor apraxia usually results from a large lesion of the dominant posterior parietal area or the corpus callosum. Failure to find swelling at physical examination suggests that the swelling may have been purely a subjective sensation. It is traditionally taught that excessive response to stimuli (such as warm objects feeling hot) indicates a thalamic lesion, but there are many cases reported confirming that the so-called thalamic overaction phenomenon can occur with cortical lesions. Hyperalgesia and spontaneous pain were observed in patients with head wounds producing relatively pure cortical destruction. Areas 4 and 6 receive fibers from the lateral ventral thalamic nucleus, and experiments involving cortical destruction suggest that they should be considered accessory sensory areas.

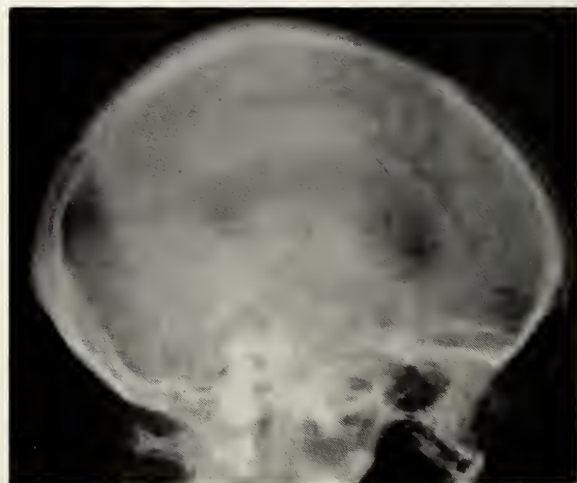


Figure 2. Pneumoencephalogram made on March 14, 1961.

Lesions involving area 44 have been described which cause a lack of masseter activity. In one instance a man with a subdural hemorrhage on the left in the region of area 44 was thought to have tetanus, because of inability to move the jaws. Although the individual symptoms described above may be seen with lesions in areas other than the frontal cortex, a syndrome of apraxia, reflex grasping, and hyperreflexia is fairly specific to areas 6 and 44.

Our patient's course was gradual and progressive with symptoms appearing in chronological sequence and gradually becoming bilateral. Although involvement of the left side was more extensive, the later onset of similar but less severe symptoms on the right side suggests symmetrical distribution of the disease process. In other words, we seem to have a disease process which is symmetrical in location, but asymmetrical as to degree of involvement.

In conclusion, we will base our differential etiologic diagnosis on a disease process running a two-year progressive course with bilateral and possibly symmetrical involvement of the frontal lobes of the cerebral cortex. Space-occupying lesions such as subdural hematoma and neoplasm must be considered, but are excluded because of the absence of signs of increased intracranial pressure, no history of trauma, and normal spinal fluid findings. Amyotrophic lateral sclerosis attacks the pyramidal cells of the precentral cortex rather selectively, but can be ruled out by absence of fasciculations, atrophy, and other lower motor neuron symptoms.

Chronic infectious diseases, such as syphilis, tuberculosis, and fungal infections, can be excluded on the basis of an atypical course of the disease, negative serology, and the absence of general symptoms of infection. Nutritional disease and toxins rarely involve the brain locally, and the patient's history is not compatible with these diseases.

Cerebral arteriosclerosis is ruled out because there is no hypertension, because of the normal fundoscopic examination and because of the progressive rather than step-like process of the disease. cerebrovascular lesions are excluded because of the progressive, chronic course of the disease, and the lesions do not correspond to any vascular pattern.

The degenerative diseases of the brain must be considered. Pick's disease is a form of symmetrical cerebral atrophy usually involving the frontal and temporal lobes. The onset of the disease is usually during the fifth and sixth decades. Localizing neurologic symptoms such as those seen in our patient can occur. The symptoms develop gradually and progressively over a two to ten year period, and include dementia, apraxia, and euphoria. Pneumoencephalograms may show ventricular dilatation of the frontal and temporal horns. Alzheimer's disease can rarely

be differentiated from Pick's disease without a pneumoencephalogram, but Pick's disease usually has a shorter course, later age of onset, and frequent localizing signs. Pick's disease is a possible diagnosis, but I feel I have a better one.

Demyelinating diseases must also be considered. Diffuse cerebral sclerosis can produce a large lesion, usually bilateral and symmetrical, in virtually any area of the cortex. They therefore can produce a lesion as this patient had, with a similar progressive clinical course. The diseases under consideration here have as a common characteristic: diffuse demyelination of the cerebral cortex. They have recently been classified by Dr. Poser into three groups: (1) the leukodystrophies which are caused by errors of anabolism of myelin, and are ruled out in the patient because of the lack of a family history; (2) the subacute leukoencephalopathies are inflammatory processes and are ruled out by the patient's two-year course; and (3) in Schilder's diffuse cerebral sclerosis, the normally constituted myelin sheath degenerates because of endogenous or exogenous disease process. This entity is closely related to disseminated or multiple sclerosis with a transitional phase between the two described by Dr. Poser. Since pure diffuse sclerosis alone explains completely the anatomical lesions that we have described and is compatible with the pneumoencephalographic findings, I propose this diagnosis. Contrary to the common belief that Schilder's disease is limited to childhood, Dr. Poser has shown that 67.5 per cent of these cases occur above age 16 and 3 per cent of a series of cases occurred in the sixth decade. He found that most cases of diffuse sclerosis, especially in adults, are a transitional phase between this and disseminated sclerosis, and we cannot rule this out clinically in this patient.

Dr. Delp: Thank you, Mr. Morgenstern. Mr. McElhinney, what is your diagnosis?

Mr. McElhinney: Schilder's disease.

Dr. Delp: Mr. Dirks, what is your diagnosis?

Mr. Dirks: Pick's disease.

Dr. Delp: Why?

Mr. Dirks: Well, there were no manifestations of dementia in this patient, but there were the other manifestations of a lesion in the frontal cortex, and dementia is not always present in this disease.

Dr. Delp: Mr. Kreye, what was your diagnosis?

Mr. Kreye: Diffuse cerebro sclerosis.

Dr. Delp: Why did you discard the diagnosis of Pick's disease, Mr. Morgenstern?

Mr. Morgenstern: Because dementia is the most outstanding symptom of Pick's disease.

Dr. Delp: If you had a second diagnosis, Mr. McElhinney, what would it be?

Mr. McElhinney: Pick's disease.

Dr. Delp: A third diagnosis?

Mr. McElhinney: Alzheimer's disease.

Dr. Delp: Mr. Dirks?

Mr. Dirks: Alzheimer's disease.

Dr. Delp: Mr. Kreye?

Mr. Kreye: Pick's disease.

Dr. Delp: Mr. Morgenstern?

Mr. Morgenstern: Pre-senile dementia.

Dr. Delp: Pre-senile dementia. That seems to be a safe one. Now just a few questions. What about this subjective complaint that we played with here for so long—the swelling of the hands, McElhinney?

Mr. McElhinney: This was never observed, so we conclude that it was surely subjective, and it could be explained on the basis of the frontal lesion, which I think our patient had.

Dr. Delp: Mr. Dirks?

Mr. Dirks: A hypothalamic lesion could also explain it.

Mr. Kreye: I believe it could have been subjective due to inactivity of the hand.

Mr. Morgenstern: Well, one reference described a patient in which there was sudden onset of left hemiplegia and a marked persistent left-sided edema, but digitalis therapy alleviated right-sided edema, and the patient possibly lay on his right side. There are other reports in the literature of edema occurring in hemiplegic areas. There have been experiments in which they have measured the fluid content of the contralateral limbs after stimulation of areas 4 and 6 of the precentral motor cortex and have found it increased in fluid on the contralateral side.

Dr. Delp: What about the euphoria that was mentioned?

Mr. Morgenstern: I think that goes along with the frontal lesions also, because it is described in both diseases with frontal lesions.

Dr. Delp: Do you have any other ideas about this, Mr. Kreye?

Mr. Kreye: I think the euphoria could be postulated as being the result of diffuse cerebrosclerosis. It is also seen in disseminated cerebrosclerosis and multiple sclerosis, so therefore this would help to substantiate our diagnosis of diffuse cerebrosclerosis.

Dr. Delp: This patient wore artificial dentures, Mr. McElhinney. During the past two or three weeks of her life, certainly during the past four or five days of her life, she had great discomfort because she could not open her mouth, and the dentures could not be removed. Even the plastic surgeons and dentists were not able to get them out. Now this is a rather remarkable degree of lockjaw. Would you explain the mechanism?

Mr. McElhinney: Some premotor lesions have been observed that cause a trismus type of spasticity of the muscles of mastication.

Dr. Delp: Any other ideas?

Mr. Morgenstern: I feel it is a release of extra-pyramidal control over the trigeminal nerve. Masseter activity has been described with lesions in fairly specific areas of the cortex.

Dr. Delp: This subtly changed between the time the patient was seen here in April and the time she died in October.

Mr. Dirks: This activity could also be produced by an irritative lesion as well as by a lesion which destroyed the area.

Dr. Delp: All right, thank you. I think we will call on the staff now. Dr. Ziegler, will you begin the discussion?

Dr. Dewey K. Ziegler (neurologist): I think some signs in this woman were extremely specific, and as was brought out in the discussion, one of the most important is the grasp reflex which is quite specific for frontal lobe disease. So it was quite certain that she had bilateral frontal lobe disease as evidenced by the grasp reflex. The apraxia was also extremely striking and pointed to the dominant hemisphere being involved. This apraxia is a dominant hemisphere syndrome, so we know that the left hemisphere was involved. The grasp reflex was bilateral and the symptoms were bilateral, so undoubtedly both frontal lobes were involved, and this was confirmed by the pneumoencephalogram which showed the dilatation in both lateral ventricles. Agraphia is a very interesting finding and it is one of the highest functions of the brain. It can be produced by lesions almost anywhere in the dominant hemisphere, but most strikingly by frontal lobe lesions, and I think this is again a confirmatory sign of the severe disease of the dominant frontal lobe.

There was a comparative paucity of signs pointing to the posterior portion of the hemispheres, that is objective sensory findings, visual field findings and speech disturbances, all of which point to a more posterior region. It was difficult to examine this woman as far as sensation goes, because her responses frequently were not accurate.

So we have signs pointing to bilateral severe frontal lobe disease. I think the late inability to open her mouth might have been due to bilateral spasticity of the masseter muscles. This is a very unusual type of spasticity. We see lots of people with bilateral spasticity, and a very few with bilateral spasm of the masseter muscle. I think that it is also possible that this was a severe apraxia of the mouth, which is seen in minor degrees in patients with dominant frontal lobe lesions so the patients actually lose the ability to open the mouth although there is no abnormality in the reflex arc. The other way you could establish this would be by seeing whether the mouth

could be opened passively, and sometimes this is even hard because the patient is unable to cooperate. This may be somewhat of a philosophical distinction, but spasticity would be accompanied by a markedly exaggerated jaw jerk and severe rigidity of the muscles. The other would be accompanied by less rigidity of the muscles, and there would be some intermittent relaxation if it is a true apraxia.

Now, regarding etiology I think all possibilities have been covered. I would place the emphasis on Alzheimer-Pick's disease. These are not too hard to differentiate pathologically, but clinically are extremely hard to differentiate. They are both atrophies of the brain: Pick's being more localized in frontal and temporal areas; Alzheimer's being more generalized. But the overlapping clinical symptomatology is so extensive that we would have to give up in trying to differentiate them. I would place this as the first possibility, probably because statistically they are so extremely much more probable than the other causes of diffuse degeneration.

The major differential that I think of is bilateral atrophy due to degenerative brain disease versus an obscure underlying mass, and none of the things which have been mentioned absolutely rule out a mass. We see brain tumors which do not give increased pressure and do not cause increased spinal fluid findings, but very rarely do they produce this amount of intrinsic disturbance of the frontal lobe without showing something. So this is one of the reasons for doing contrast studies—to rule out a mass. As far as Schilder's disease (diffuse cerebroscleroses) goes, this is an extremely rare entity and in adults is magnificently rare. There is a specific finding in spinal fluid which I don't believe this patient had. Most of these patients have an abnormality in the gamma globulin in the spinal fluid which is reflected in the colloidal gold. So I would feel that she had rapidly progressive bilateral frontal lobe atrophy on the basis of, I will say, Pick's disease, although I said it is clinically impossible to differentiate this from Alzheimer's, and I would feel that anything else is quite improbable.

Dr. Delp: Thank you, Dr. Ziegler. Dr. Steegmann, could we have your comments?

Dr. A. T. Steegmann (neurologist): Before I saw the pneumoencephalogram, I suspected this patient of having a glioblastoma that had started in the corpus callosum or perhaps deep in the right frontal lobe and had infiltrated across the corpus callosum to the left side. The fact that the patient may not show too much in the way of symptomatology until these lesions become fairly large, of course, is well known. These may early demonstrate the clinical course of a slower growing astrocytoma. But after seeing the pneumoencephalogram, I thought this case fitted best

into the concept of Pick's disease, the reason being that there is atrophy that seems to be predominately in the frontal lobe. Unfortunately the pneumoencephalogram did not show what the posterior horns of the ventricle looked like, which I would like to have known. But at least there was no pattern of cortical atrophy in the parietal lesions which would be against Alzheimer's disease.

Now I'd like to make just a couple of comments about Pick's disease. Pick's disease is not invariably a bilateral disease. I saw a brain when I was in Europe that involved only the second and third temporal convolutions on the right side. However, in a majority of the cases of Pick's disease the frontal atrophy is bilateral, and both temporal poles may be atrophic—they usually are—often with sparing of the first temporal convolution. The clinical history in this case unquestionably says that this patient had right frontal pathology because of the grasp reflex in the left, which is contralateral. And this usually represents a primitive righting reflex that is released by disease in the premotor cortex. On the other hand, the fact that there was apraxia on the opposite side would point to a lesion in the left frontal lobe, although we all know that apraxia is a more complex phenomenon, unless it is a pure motor apraxia. I think that most of the clinical signs here point to frontal lobe involvement on both sides, and therefore, I would favor a diagnosis of Pick's disease.

Dr. Delp: Would anyone else like to comment about this case? Dr. Calkins.

Dr. Larry Calkins (ophthalmologist): I have a little to add to the discussion. I agree with the bilateral frontal disease, but I just wonder if there is not a little more to it than that. I hate to just let it go as a diffuse degenerative disease of the frontal lobes of unknown etiology. I am going to postulate that this woman had a diffuse carcinomatosis, not in the skull, but in the viscera somewhere, and these changes in the brain are secondary to metabolic dysfunctions resulting from the carcinomatosis.

Dr. Delp: All right, Dr. Kepes, let us know what you have found.

Pathological Report

Dr. John Kepes: The body of this lady was very emaciated. She was 69 inches tall, and she weighed only 95 pounds. The internal organs were quite dry. There was such a high degree of dehydration that when the abdomen was opened the mesentery and the intestines had an almost parchment-like consistency. The dehydration was most likely due to her difficulty in swallowing. There was a general loss of subcutaneous fat tissue and visceral fat—perirenal and mesenteric fat was mostly gone.

The rest of the body did not show any particular

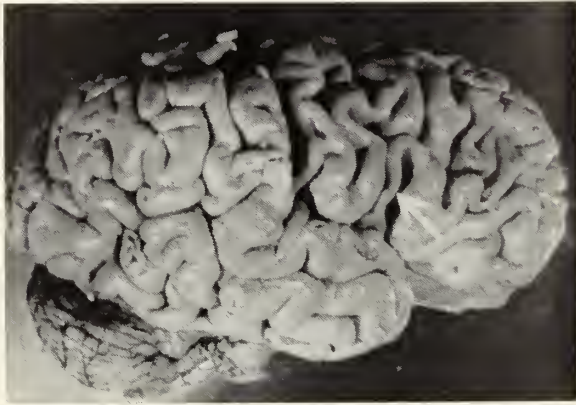


Figure 3. Lateral view of the brain. Atrophy of the frontal lobe is most marked in the opercular portion of the third frontal gyrus (arrow). No atrophy seen in temporal, parietal and occipital lobes.

changes, and we were expecting to see some very striking changes in the brain. There were, however, no very striking findings on the gross examination. The brain weighed 1200 grams, which is moderate but not a severe atrophy, certainly. No doubt, certain sulci are deeper than normal and certain convolutions are narrower and atrophic. I would like to call attention here to the fact that the posterior half of the brain does not greatly participate in the atrophy, and maybe the most marked lesion is right here in the opercular area (Figure 3). I would point to one particular gyrus here. The area belongs to the third or inferior frontal gyrus, and it can be called the opercular portion of the inferior frontal gyrus. There is very marked atrophy. In the literature of this disease there have been cases reported where this particular gyrus was solitarily involved, at least so it appeared from the surface. Kahn and Spatz reported such cases (Figure 4). The disease is Pick's atrophy. Returning to our case, you can see that the frontal lobe is not very severely involved. This patient apparently had this disease for about two years. It did not run its complete course. It happens sometimes that the patient dies from an intercurrent disease like pneumonia, or in this particular case inanition, before the disease runs its full course.

Since diffuse sclerosis was mentioned in the differential diagnosis I want to point out that the posterior half of the brain is usually participating in the process in diffuse sclerosis and visual disturbances are rather striking in cases of Schilder's disease. I would like to mention certain facts about the kind of atrophy that occurs in Pick's disease. It seems that phylogenetically and ontogenetically recent structures are mostly involved, such as the frontal pole and the subfrontal areas. The temporal lobe may be severely

involved, but, as Dr. Steegmann pointed out, the posterior two-thirds of the first temporal gyrus are almost always preserved, as are the auditory areas and the visual cortex. In our case we could see a loss of myelin in the white matter in the affected areas and they were replaced by gliosis. Thus, there was some demyelination, but it was restricted to immediate subcortical areas in the gyri involved. Senile plaques, as seen in senile atrophy and Alzheimer's disease, are not present as a rule in Pick's disease, and we did not find any of them in our case. We found a very characteristic lesion in the cortex and in the corpus striatum, and in some areas of the thalamus also: "ballooning" of the nerve cells (Figure 5). You can see that the nucleus is pushed to the periphery and the cytoplasm appears to be almost blown up by a homogenous mass, which on Nissl stain appears as light blue material. Now, in Pick's disease those ballooning cells can be impregnated with silver salts, and you can see (Figure 6) a Bielschowsky impregnation of one of those cells. There is the nucleus out in the periphery, and the material that was so pale on Nissl's stain is now black because it is argyrophilic. The black mass is filling up the contents of the nerve cell.

Pick's disease received its name from Arnold Pick who was professor of neurology and psychiatry of the German University in Prague at the turn of the century. Pick thought he observed a localized form of senile atrophy, and compared it to Lissauer's paresis which is a focal form of syphilitic paresis involving mostly the motor areas. Now Alzheimer, who described Alzheimer's disease among many other things, was very interested in Pick's cases. He asked for permission to work them up. Since he described those

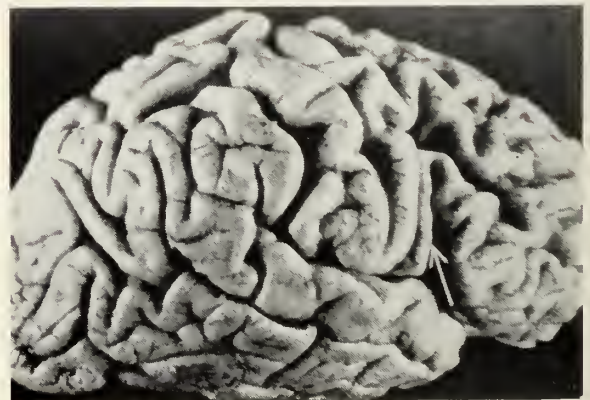


Figure 4. Lateral view of case reported by Kahn and Spatz. The topical involvement in the atrophic process shows striking similarity to that of our case (from Henke-Lubarsch Handbuch der Speziellen Pathologischen Anatomie und Histologie).

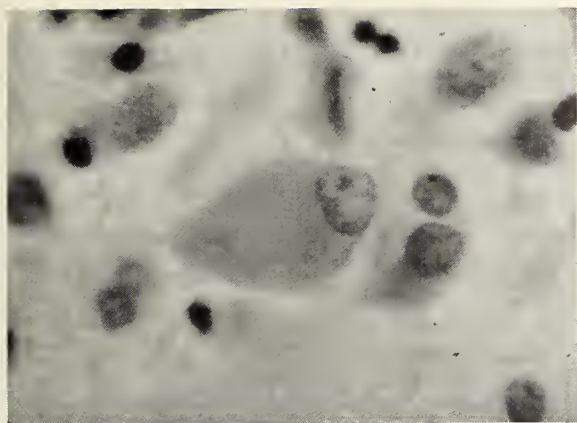


Figure 5. "Ballooning" of cortical nerve cell. The cell body is occupied by a homogenous mass, the nucleus is pushed to the periphery. Nissl stain $\times 450$.

senile plaques in senile cases and presenile Alzheimer's disease, he was expecting to find a great number of them in Pick's cases, but he did not encounter any. He was also looking for fibrillary degeneration in nerve cells, and he did not find any of that either. He, therefore, concluded that he was dealing with a disease different from senile atrophy or Alzheimer's disease. On the other hand, he did find those "ballooning" nerve cells and he found them to be very characteristically present in Pick's cases. So, the strange situation occurred that it was actually Alzheimer who described the true nature of Pick's disease the way we know it today. This disease is worldwide. It occurs in Indonesia, in China, and in many other parts of the world. Many cases have been reported in Scandinavian countries, particularly in Sweden. Some cases are familial and on the other hand sporadic cases are also well known. The ratio between females and males is two and a half to one. It's not as frequent as Alzheimer's disease (the latter being four times as frequent).

To summarize the pathological findings, Dr. Steegmann already mentioned that the atrophy of the frontal and temporal cortex is most marked. The subfrontal area, the orbital gyri, and the gyrus rectus are very frequently involved. On the other hand, the occipital lobes and the auditory cortex are usually spared from the disease.

I would like to summarize briefly the differences between Pick's atrophy and Alzheimer's disease. Pick's disease is not quite symmetrical. One half of the brain can be more severely involved than the other half. In Alzheimer's disease, usually both hemispheres are equally involved. In Pick's disease there is no occipital involvement, whereas in Alzheimer's disease, the occipital lobes are participating in the

disease process. In Pick's disease we find ballooning cells, in Alzheimer's disease we find the senile plaques and the fibrillary degeneration. Finally, a very important point—in Pick's disease, as you could see here, there was a degeneration of the subcortical myelin, whereas in Alzheimer's disease the myelin is mostly intact. As a matter of fact, some people feel that the changes actually begin subcortically in the myelin sheaths, and the ballooning of the nerve cells is simply a reaction to the disruption of the myelin. However, in the usual axonal degeneration, with the reactive swelling of the nerve cells, one does not see argyrophilic masses inside the neurons, so this serves as a differentiating point from axonal changes.

In summary, this lady suffered from Pick's disease, which did not run its full course. The atrophic process was still localized to certain characteristic key areas and the microscopic findings confirmed the diagnosis of Pick's disease.

Dr. Delp: Thank you, Dr. Kepes. Well, we have had a good descriptive portrayal of a rather unusual disease here. And it probably is true that that is where we will have to let it lie. However, I'd like to have conjectural statements from some of our experts as to the "why" of this thing. Dr. Ziegler, would you care to offer some why's?

Dr. Ziegler: The answer to that is "no," because nothing is known about the underlying metabolic disturbance. I really think that we have a complete blank as far as etiology goes except to say in rather vague fashion that there must be an underlying biochemical disturbance of the nerve cell metabolism, but there has been no progress made on it.

Dr. Delp: Dr. Steegmann?

Dr. Steegmann: Professor Hugo Spatz has expressed the idea in recent years that he has collected

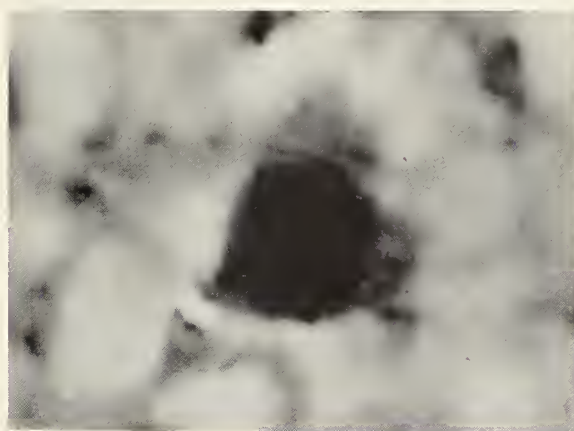


Figure 6. Ballooning cell within argyrophil dark staining mass in the cytoplasm. Bielschowsky's silver impregnation $\times 450$.

more evidence that this may be a genetically determined disease, but I don't think that beyond that statement, which is based largely on the study of some families where the disease occurred in more than one member of the family, there is very much to support it. There is certainly not, as far as I know, any basic work on the chemistry of it. I would like to make just one point: There had been some attempt to make a differential clinical diagnosis between Alzheimer's and Pick's disease. In my own experience in Pick's disease the patients have more apathy than they do agitative phenomena, and they also are more likely to have focal neurologic signs, such as some evidence of aphasia, once in a while a partial paralysis, perhaps on one side, and the character changes that are often identified with bilateral frontal atrophy—that is, psychopathic conduct that may occur when the individual is still mentally fairly well intact. Alzheimer's disease on the other hand is more likely to be characterized by agitative episodes and

have at least more obvious involvement of the sensory portions of the brain in which they show a more obvious dementia with very often apraxia of the ideational type, which is usually seen in bilateral parietal lobe disease.

Pathological Anatomical Diagnosis

Pick's disease. (Progressive focal atrophy of the brain.)

Dehydration, marked.

Wasting of subcutaneous fat tissue, moderate.

Atrophy of mesenteric, perirenal, peripelvic and subepicardial fat, marked.

References

1. Greenfield, J. G.: Neuropathology, pp. 497-502, Edward Arnold Publishers Ltd., London, 1958.
2. Luers, T. and Spatz, H.: Picksche Krankheit in Henke-Lubarsch's der Speziellen Pathologischen Anatomie und Histologie XIII/1, pp. 614-715, Springer Verlag, Berlin-Göttingen-Heidelberg, 1957.

KANSAS STATE DEPARTMENT OF HEALTH

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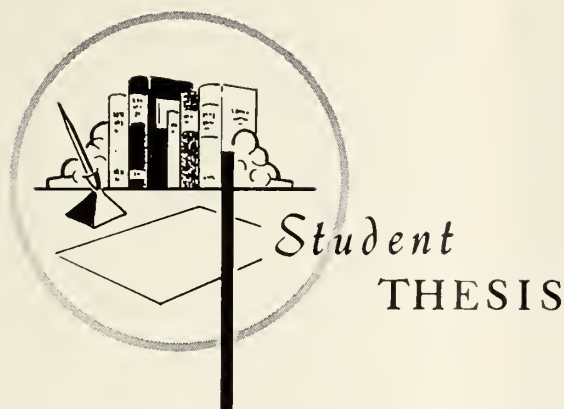
Division of Preventable Diseases—Division of Vital Statistics—Kansas Morbidity Incidence

Summary of Cases Reported in May 1963 and 1962

And cumulative totals for the first five months of 1963 and 1962

Diseases	May			January to May Inclusive		
	1963	1962	5-Year Median 1958-1962	1963	1962	5-Year Median 1958-1962
Amebiasis	30	4	3	72	27	27
Aseptic meningitis	—	—	*	—	4	*
Brucellosis	1	4	4	6	13	20
Cancer	540	310	368	1,688	1,463	1,788
Diphtheria	—	—	—	—	—	—
Encephalitis, infectious	1	—	2	3	6	11
Gonorrhea	219	226	177	1,170	907	907
Hepatitis, infectious	18	26	26	109	285	195
Meningitis, meningococcal	1	1	2	5	8	8
Pertussis	3	10	8	26	16	29
Poliomyelitis	—	—	—	—	—	—
Rheumatic fever	—	1	1	—	7	3
Salmonellosis	43	2	3	90	20	20
Scarlet fever	20	35	74	273	396	470
Shigellosis	3	1	1	18	8	13
Streptococcal infections	73	92	77	761	823	802
Syphilis	114	100	100	479	494	548
Tinea capitis	1	2	12	40	69	69
Tuberculosis	13	14	23	120	114	137
Tularemia	1	1	2	6	6	6
Typhoid fever	—	—	—	—	—	2

* Statistics on 5-Year Median not available.



Monoamine Oxidase Inhibitors: A Review

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Introduction

WITHIN RECENT YEARS interest has arisen in a group of drugs having in common the ability to inhibit the enzyme, monoamine oxidase (MAO). Their use has been advocated in such clinically diverse conditions as psychic depression, as adjunctive aids in the long term therapy of chronic debilitating diseases such as rheumatoid arthritis and ulcerative colitis, as antihypertensive agents, and in the therapy of angina pectoris.

The first such drug, iproniazid, an analogue of isoniazid was synthesized in 1951 by Dr. H. H. Fox of Hoffmann-La Roche laboratories as a tuberculostatic agent. Although effective in promoting healing of the tubercle it was soon noted that the drug occasionally induced a profoundly stimulating effect on the central nervous system (CNS).

It was largely due to this side effect that the drug quickly fell into disrepute as an antitubercular agent in most centers and was submitted for clinical evaluation with psychiatric patients. One of the early trials was both well controlled and statistically valid. The early studies agreed in the conclusion that the drug was essentially without therapeutic value in mental disease.

A few clinicians continued to use the drug in tuberculous patients, because of the clinical impression

that it "seems to help the patient in general and the healing process in particular." Its use in man, however, would probably have disappeared had it not been for several independent groups of investigators—notably Dr. Nathan Kline at Rockland State Hospital, Dr. G. E. Crane at Montfiore Hospital, and Dr. A. L. Scherbel at the Cleveland Clinic—who began reevaluating the use of iproniazid in a number of unrelated diseases. The effectiveness of this group of drugs is still a matter of conjecture in a number of the many disease states for which they have been recommended.

It is the purpose of this paper to summarize some of the current data relating to the clinical efficacy of these drugs, the drugs commercially available at the present time, their toxic manifestations, and some of their observable pharmacological actions with correlation wherever possible between experimental and clinically observed phenomena.

Clinical Applications

Because of the wide range of enzymatic actions of the currently available MAO inhibitors and because MAO itself functions in a single step in numerous sequential enzyme systems, the pharmacologic actions of this group of drugs are many. They are, as a consequence, not specific for any disease and are presently employed on an empirical basis to effect symptomatic improvement in a number of unrelated disease states.

Psychic Depression

The mood elevating effect of the MAO inhibitors may occur dramatically, mildly, or not at all. On

* This is one of a group of theses written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be best by the faculty at the school. Dr. Hastings is now serving internship at the University of Kansas Medical Center.

some occasions there occurs a "paradoxical response" and the patient becomes more depressed. When it is present the stimulating effect is insidious in onset, and the effect of the drug cumulative. The onset of action is frequently not observed until the patient has received the drug for two or three to as long as six weeks. In large, well controlled, statistically validated studies including all diagnostic categories of depressed patients only a slightly greater percentage of depressed patients recover with MAO inhibitor therapy than those who recover on placebo alone. The notable thing, however, is that a few patients who are unresponsive to other modes of therapy respond dramatically to one of the MAO inhibitors and promptly relapse when placebo is substituted.

The fact that there are no rigorous criteria by which one can successfully predict which patients will respond to a MAO inhibitor does not negate the hypothesis that some common dysfunction in CNS amine metabolism might be the ultimate source of the clinically observed depression of affect in these patients since one would expect a primary depression of the affect to manifest itself in harmony with the patient's premorbid psychic structure. Moreover, more recent and perhaps more appropriately designed studies indicate that among depressed patients exhibiting neurotic symptoms as opposed to patients exhibiting classical endogenous or schizoaffective depressions, and among patients who fail to respond to electroconvulsive therapy (ECT), response to the MAO inhibitors is statistically better than with other modes of therapy.

In a well controlled, well designed study, West and Daly clearly delineated a group of patients subsequently termed "atypical depressives" who responded best to MAO inhibitors. These were people with good premorbid personality adjustments who frequently had broken under undue situational stress. They were many times sensitive overconscientious patients who retained good insight into the nature of the problem but seemed powerless to overcome their symptoms. They frequently exhibited hysterical, phobic, or anxiety-like symptoms. Depressed agitation was an infrequently noted symptom as contrasted with patients with endogenous depression, and the diurnal pattern also differed. These patients were not troubled by early awakening but had difficulty going to sleep and upon awakening felt unrefreshed. Throughout the day they then continued to complain of severe fatigue unrelated to the actual amount of physical or mental exertion, and they felt worse as the day progressed. The symptomatology showed striking day-to-day variation for no apparent reason and seemed prone to premenstrual exacerbation. The syndrome was frequently accompanied by profound weight loss.

It is this same type patient who has long been noted to respond unfavorably to ECT and is often made worse, a clinical observation correlating well with an earlier report that those patients not responding to ECT as a group respond best to MAO inhibitors than any other group.

In brief, it is conceded by all but the most adamant advocates of the use of MAO inhibitors that ECT is still the treatment of choice in most severe depressions, particularly where suicide seems a reasonable possibility. Imipramine is probably the chemotherapeutic agent of choice in endogenous and schizoaffective depression as well as in paraphrenia and dementia, while the MAO inhibitors are probably most effective in patients with "atypical," neurotic, or "psychasthenic" depressive reactions and those who fail to respond to ECT.

Connective Tissue Diseases (Rheumatoid Arthritis, Scleroderma, Systemic Lupus Erythematosus, Chronic Ulcerative Colitis, Dermatomyositis.)

CNS manifestations consisting of psychic depression, emotional instability, and a low pain threshold occurs with such frequency as a part of the various "collagen disorders" as to appear an integral part of the disease processes. Furthermore it has long been noted that when the CNS manifestations predominate the mesenchymal manifestations are particularly difficult to control. The interrelationship between CNS function and the mesenchymal tissue insult is anything but clear. Speculation has arisen that both the CNS manifestations and the peripheral anatomic changes may be etiologically related.

Even though the ethereal nature of many of the symptoms of these diseases makes evaluation of any therapy difficult, the use of the MAO inhibitors as adjunctive aids in the long term therapy of these conditions has been studied over the past ten years by Scherbel and others. On the basis of this experience he reports that "frequently the administration of a MAO inhibitor alleviates many of these ill defined symptoms."

Furthermore the possibility is to be entertained that agents may effect more than symptomatic relief of CNS manifestations of these disorders. Scherbel has reported that at near toxic doses he has observed objective evidence of regression of the joint manifestations of rheumatoid arthritis, that patients with scleroderma "frequently improve both subjectively and objectively," and that patients with ulcerative colitis frequently experience less tenesmus and have fewer stools per day.

Another observation of possible importance is the apparent healing effect exerted by these agents when applied locally to ischemic ulcers complicating Raynaud's phenomenon, pyoderma gangrenosum and

chronic fistulae and sinuses complicating chronic ulcerative colitis.

An additional advantage includes the potentiation of the 4-aminoquinolin compounds and an apparent potentiation of the corticosteroids when they are required for relief of joint manifestations.

In summary, there are numerous theoretical advantages to support the use of these agents as adjunctive aids in the management of the so-called "collagen diseases," and careful clinical observation suggests their practical beneficial effect. To our knowledge, however, the efficacy of these agents has never been evaluated against a placebo control group under double-blind conditions.

Hypertension

Orthostatic hypotension was an early observed side effect of iproniazid therapy which stimulated its evaluation as an antihypertensive agent. The production of this effect is extremely variable from patient to patient. It is apparently potentiated by diuretics. One clinical observer estimated that approximately one-third of his hypertensive patients without renal impairment can be satisfactorily maintained on MAO inhibitors alone. This agrees in essence with similar observations by others.

The use of these agents in hypertension is somewhat open to question, however, since the elucidation by Assali and DasGupta of some of the cardiovascular effects attendant to the induced orthostatic hypotension.

These effects included a striking decrease in cardiac output, renal plasma flow, and glomerular filtration rate with an increase in renal vascular resistance. It was the conclusion of these authors that the hypotensive effect probably results not from any true vasodilatory action but from venous pooling and that the hemodynamic alterations are similar to those of the ganglionic blocking agents, an effect known to be produced by iproniazid. These unfavorable effects combined with the inconsistency with which the effect is produced, and the many toxic manifestations one must consider probably render these agents of little clinical utility as long as more effective antihypertensives are available.

Angina Pectoris

After enthusiastic initial reports in which up to 97 per cent of anginal patients were reported to have responded to iproniazid with dramatic relief of anginal pain, enthusiasm was somewhat dampened. Although independent reports by reliable clinicians have appeared tabulating control of pain in 60 per cent to 65 per cent of anginal patients, the effect seems to disappear when the double-blind technique is applied.

Although there was much early speculation concerning possible mechanisms through which iproniazid might exert its antianginal effect there remains a dearth of relevant experimental data. It has been suggested that iproniazid might improve myocardial ischemia either through a vasodilating effect of increased levels of cardiac serotonin, due to a direct vasodilating action of the inhibitor itself, or to an "oxygen sparing effect" resulting from the inhibition of MAO. If MAO therapy truly improved the basic myocardial ischemia, however, we would expect to see an improvement in the EKG ischemic pattern and this does not occur. The suggestion has also been made that the demonstrable ganglionic blocking action of the MAO inhibitors might account for the control of pain since the afferent nerve fibers for visceral pain are known to travel with fibers subserving autonomic function. This explanation too appears unlikely, since the more potent ganglionic blocking agents do not exhibit antianginal effects.

The fact that asymptomatic myocardial infarctions have been reported in patients on MAO inhibitor therapy argues that the apparent clinical improvement of these patients may be due to the euphoriant effect of the drug or to placebo effect and not due to a beneficial effect on the myocardium. The fact that it takes at least a few days for the effect to develop also argues for the former view. In a similar vein Evans and Hoyle in 1933 reported relief of pain in 38 per cent of anginal patients given placebo alone.

It is obvious that a condition responding so well to placebo, tranquilizers, and improvement in the physician-patient relationship must include a large psychogenic component. However, as noted by Hirschleifer, "since anxiety and tension rather than depression are the precipitating factors initiating anginal symptomatology . . . sedatives, tranquilizers, and antianxiety drugs would seem to be a more suitable choice in these cases."

Therefore, in view of the unverified efficacy of these agents in the treatment of anginal pain, the serious side effects attendant to their use, the lack of any evidence of beneficial effect on the myocardium, and the theoretical danger that during an induced hypomanic state the patient would likely be more prone to ignore the danger signal of anginal spasm with detrimental or even fatal results, as well as the possibility of the actual potentiation of myocardial ischemia during episodes of induced postural hypotension, the use of such drugs would appear unwarranted except in rare individual cases.

Neoplastic Disease

MAO inhibitors have also been utilized to advantage in the adjunctive therapy of progressive neoplastic disease, especially where concomitant depres-

sive reaction is present. Beneficial effects include increased appetite, decreased fatiguability, and a decrease in the need for opiates. There is no evidence, however, of any alteration of the primary disease process. Interesting differences which may prove to be of research value have been noted in the response of neoplastic cells to these agents however.

Dermatologic Diseases

These agents have been evaluated in a number of skin disorders including acne, psoriasis, discoid lupus erythematosus, tuberculoderma and sarcoid with inconclusive or inconsistent results except in the case of tuberculoderma.

Commercially Available MAO Inhibitors

The relative potency of the currently available MAO inhibitors is somewhat difficult to ascertain. Dally recently compared the therapeutic effectiveness of iproniazid, isocarboxazide, pheniprazine, phenelzine, and nialamide concluding that of those patients responding favorably to iproniazid only 40 per cent also improved with isocarboxazide and phenelzine and that nialamide was even less effective. This is in agreement with most clinical reports.

Of particular interest is the recent introduction of two non-hydrazine MAO inhibitors. Both of these compounds differ radically in structure from the hydrazine derivatives, both have their own spectrum of pharmacologic activity, both are apparently effective mood elevators, and both share one pharmacologic characteristic with the hydrazine compounds—that of producing potent inhibition of MAO.

Tranylcypromine, an amphetamine derivative in vitro is the most powerful commercially available MAO inhibitor although it seems somewhat less effective in vivo. It probably exerts its action by an irreversible type of mechanism. No controlled studies have as yet appeared by which one might judge its therapeutic effectiveness but clinical reports estimate a 66 per cent to 83 per cent response to the drug. Of particular interest is the drug's amphetamine-like action which may well account for the clinically observed rapid onset of action. The most serious side effect reported to date is the unpredictable initiation of occasionally severe orthostatic hypotension which promptly disappears upon discontinuing the drug. There have been no reports to date of the occurrence of jaundice, altered hepatic function tests, or hematologic toxicity.

Etryptamine, a recently marketed non-hydrazine MAO inhibitor enjoyed a very brief but spectacular commercial existence only to be withdrawn because of the development of agranulocytosis in several patients involved in clinical trials of the drug. Even

though the compound is no longer commercially available it is still of interest by virtue of its pharmacological differences from other MAO inhibitors. The drug apparently is an effective antidepressant agent as well as a reversible inhibitor of MAO. In a small, but apparently well controlled series, etryptamine therapy resulted in a 50 per cent remission rate in a group of severely depressed patients as compared to a 13 per cent remission rate among placebo controls.

Dosage

The MAO inhibitors have been noted previously to be similar to the cardioactive glycosides in that a relatively large initial dose is required to effect the desired therapeutic result after which a small maintenance dose will suffice. They are also similar in that the effect of the drugs is cumulative.

The dosage of a given drug may vary considerably from patient to patient even among patients exhibiting identical symptoms. In the treatment of psychic depressions with these agents the dose required apparently bears no relationship to the severity of the symptomatology. The dosages of the MAO inhibitors, similar to the indications for their use is thus largely empirical and must be determined by careful clinical observation of the individual patient's response to treatment.

The dosages listed in *Table I* are those most frequently recommended for antidepressant therapy. They are by no means absolute and must be considered

TABLE I
COMMERCIALLY AVAILABLE MAO
INHIBITORS

<i>Name</i>	<i>Daily Dosage</i>	
	INITIAL mg.	MAINTENANCE mg.
nialamide (Niamid®) N-(2-benzylcarbonyl)- (ethylamino)-isonicotinamide	100-300	50-150
isocarboxazid (Marplan®) isoxazolyl-benzylhydrazine RO-0831 (HCl)	20-60	10
phenelzine (Nardil®) β-phenylhydrazine W-1544	60	5-20
tranylcypromine (Parnate®) . . . trans-2 phenylcyclopropylamine DL phenylcyclopropylamine SKF-385	20-60	5-20

ably modified from patient to patient. The dosages required to alleviate the CNS manifestations of the connective tissue disorders are said to be much smaller.

One of the difficulties in evaluating the effect of the MAO inhibitors in man has been the impossibility of determining whether MAO inhibition has occurred at all in the CNS. As Sjoerdsma has cogently pointed out, "many of the 'MAO inhibitors' do not inhibit MAO in the dosage ranges prescribed." While Sjoerdsma's suggestion for adaption of the "Tryptophane Intoxication Syndrome" as a means of screening the efficacy of CNS, MAO inhibition in man promises to be of great value in evaluation of such drugs, it is of little clinical value at this time.

Because of the ubiquitous distribution of MAO, the portion of the enzyme occurring in the CNS comprises but a small portion of the total body enzyme. Thus while any of the currently applied tests of MAO inhibition in man might reflect what occurs peripherally, the degree of MAO inhibition on the other side of the "blood-brain barrier" remains an enigma. The degree of MAO inhibition produced by a given agent in any organ is a function not only of its enzyme specificity but also of its ability to penetrate the cytoplasmic membrane and perhaps the mitochondrial membranes of the cells of the organ in question. In the case of the brain, its ability to permeate the "blood-brain barrier" is of equal importance. These abilities vary tremendously among species, an effect demanding caution in extrapolating the brain assay results obtained in one specie to another.

It has been Sjoerdsma's observation that the dose of any of the currently available compounds sufficient to produce a mood elevating effect is "almost always accompanied by some degree of postural hypotension." Although this effect most likely reflects peripheral MAO inhibition it still may be useful as a means of determining clinically when the range of effective dosage has been reached.

Once again the correct dosage of each of these agents is similar to the proper dosage of one of the cardioactive glycosides in that the amount required is that which achieves the desired effect without producing undue toxic manifestations. The correct dosage can only be determined by close clinical observation of the patient and not by anyone's "recommended dose." The laboratory is little help in determining when this dose has been reached in the individual patient.

Side Effects

Hepatocellular Toxicity

Prognostically the most serious complication of

MAO inhibitor therapy is that of hepatocellular toxicity. The incidence of this effect is somewhat difficult to determine. However, prior to 1958, of the 500,000 patients having received iproniazid, Hoffmann-La Roche, Inc. had on file 102 reported cases of "hepatitis" and 21 deaths. The mortality rate corresponds to 20 per cent with that noted in a survey of 180 cases also reported in 1958.

Histological and anatomical hepatic changes in these cases are indistinguishable from those seen in viral hepatitis and include: (1) spotty hepatocellular necrosis of varying severity with replacement of single liver cells with mononuclears, (2) acidophilic bodies, (3) conspicuous variation in the cells bordering the less severely necrotic areas, (4) ductular proliferation, (5) portal and periportal mesenchymal infiltration, (6) pigment and lipofuscin accumulation in Kupffer cells and portal histocytes, and (7) inflammatory reaction to hepatic vein tributaries. This picture is at variance with that seen in chemically induced hepatic injury by such agents as carbon tetrachloride which tends to involve contiguous zones of the lobule to the same degree. It also differs from the intracholangiolar hepatic alterations seen following a number of agents including the phenothiazines. The major difference in the histopathological appearance of viral vs. iproniazid induced "hepatitis" is in the greater degree of severity encountered after iproniazid. This correlates well with clinical impressions, laboratory data, and mortality figures demonstrating the grave implications of iproniazid induced hepatitis.

Clinically and experimentally there are several facts of apparent significance: (1) The degree of liver damage is independent of both the dose and the degree of MAO inhibition. (2) If jaundice has once occurred in a patient on iproniazid, the chances of its reoccurrence during a subsequent course of a similar drug is greatly enhanced. (3) Similar, but not identical, hepatic changes have been observed in one strain of rats treated with iproniazid but not in other strains. These data indicate that hepatic damage may result from idiosyncrasy. The fact that its occurrence is not prevented by concomitant pyridoxine administration rules out one hypothesis as to its mechanism of production. Other speculations include Popper's idea that iproniazid might effect "activation of a latent serum hepatitis virus," that the disease might be an autoimmune phenomenon, and that alterations in the hepatic blood flow might produce the effect.

Although the complication is infrequent in occurrence it is also unpredictable, and when it does occur the mortality rate lies somewhere between 20 and 25 per cent. The mechanism of its production

remains unknown. The ultimate answer to the problem lies in the development of drugs exhibiting more organ specific characteristics. Of interest is the fact that there has yet to appear a report of jaundice secondary to administration of nialamide or either of the non-hydrazine MAO inhibitors.

Hematopoietic Toxicity

Etryptamine, a recently introduced competitive MAO inhibitor, was quickly withdrawn because of the production of agranulocytosis in a number of patients undergoing clinical trial. The mechanism of this effect is unknown.

TABLE II
RECENTLY WITHDRAWN MAO
INHIBITORS

iproniazid (Marsalid®)
1-isonicotinyl-2-isopropyl hydrazine
pheniprazine (Catron®)
phenylisopropyl hydrazine
JB-516
etryptamine (Monase®)
ethyl tryptamine

A frequently seen hematologic effect with the hydrazines is the production of a normocytic normochromic anemia which is observed during which both the peripheral blood smear and bone marrow examinations are undiagnostic. The leukopenia as well as the anemia is reported to clear rapidly upon discontinuing the drug.

Autonomic Effects

The most frequently observed difficult to control side effect of MAO inhibitor therapy is that of postural hypotension. The mechanism of its production is still speculative but because of the close similarity to hypotension produced by surgical sympathectomy or the ganglionic blocking agents it would appear that the demonstrable ganglionic blocking effect of these agents is of etiological importance. It is notable that the now defunct etryptamine was observed clinically to produce few, if any, episodes of postural hypotension. Although it is apparently an effective MAO inhibitor and mood elevator in man, it was demonstrated to exert only a depressant action and not a blocking action on ganglionic transmission.

Less disturbing autonomic effects include dryness of mouth, blurring of vision, constipation, increased peripheral warmth, urinary hesitancy, increased fre-

quency of vascular headaches, and decreased ejaculation. The latter effect is of benefit only if your patient happens to suffer concomitantly from ejaculatio praecox.

Neuralgias and Paresthesias

These side effects are most likely related to an observed decrease in the serum levels of pyridoxine and the histologically observed mild swelling and degeneration swelling of the peripheral nerve sheath after sublethal doses in rats. At any rate, the symptomatic manifestations of this infrequent occurrence can apparently be obviated by pyridoxine and cyanocobalamin therapy.

Potentiation of Other Drugs

The actions of a large number of compounds are potentiated by the MAO inhibitors. The mechanism of this occurrence with regard to the barbiturates aminopyrine, amphetamine, and acetanilid is presumably due to the inactivation of oxidative pyridine nucleotide linked enzymes.

The importance of careful history taking in this regard has been emphasized since many patients have been taking barbiturates as somnifacients for so long they are prone to forget to mention the fact. The barbiturate dose should be cut to one-half to one-quarter the usual dose. Several cases of "paradoxical response" have apparently been explained on the basis of concomitant barbiturate ingestion. The patient undergoing dental repair should be told to request the use of local anesthetics devoid of epinephrine and should be warned that his drinking capacity may be expected to decrease.

The phenothiazines are also potentiated by these drugs, the mechanism of the effect being unknown. Of particular importance is the observation that there may be an increased incidence of extrapyramidal phenothiazine induced symptoms with the concomitant administration of MAO inhibitors.

A more ominous caution is implied in reports of the totally unpredictable occurrence of toxic psychosis occasionally accompanied by hyperpyrexia, autonomic collapse, convulsions and death when MAO inhibitors are administered concomitantly or sequentially with imipramine or amitriptyline.

The hydrazine derivatives are also known to potentiate alcohol, narcotics, ether, meperidine, insulin, procaine, and cocaine.

Hypomania

This rather frequently seen side effect is usually observed during the early administration of a MAO inhibitor as a result of overdosage. The importance

of cautious administration and titration of the dose in order to circumvent its occurrence has been emphasized. The inability of the patient to regulate his own dose is also an important observation.

Miscellaneous

Other rarely observed side effects include the induction of excessive dreaming, agitation, hallucinations and confusion in older patients and the development of a puritic maculopapular rash. Both of these effects reportedly promptly disappear when the drug is discontinued.

In summary, it would appear necessary to follow all patients receiving MAO inhibitors with frequent serial SGOT, SGPT, direct and indirect bilirubin determinations, and complete blood counts until such a time as less potentially toxic compounds appear.

In addition, it is doubtful whether the concomitant administration of imipramine or its sister compound amitriptyline with a MAO inhibitor is ever justified. Administration of sympathomimetic amines should be avoided. The barbiturate dosage is decreased to one-half to one-quarter, and the patient should be warned to decrease his alcohol consumption. ACTH, the corticoids, or amphetamine reportedly can be effectively utilized to control postural hypotension. While the administration of pyridoxine and cyanocobalamin reportedly prevents the occurrence of peripheral neuropathy, hypomania can be reversed by lowering the dosage or discontinuing the drug.

Experimental Data and Hypotheses Relating To MAO and Its Inhibitors

MAO and CNS Activity

Zeller demonstrated in 1952 that iproniazid exerts a potent inhibitory effect on the enzyme monoamine oxidase. This demonstration occurring concomitantly with early data implicating iproniazid as a psychic energizer infused renewed interest in the biochemistry of brain function in general and the physiological CNS actions of MAO in particular.

The concept of a relationship between MAO inhibition and CNS function was by no means new. It was proposed as early as 1938 by Gaddum and Kwialkowski as a possible mechanism of the action of ephedrine, although there is now virtually complete agreement that MAO inhibition is not an important factor in the action of this drug in vivo.

Research in monoamine oxidase began in 1928 with the discovery by Mary Hare Bernheim of a liver enzyme she termed tyramine oxidase because of its substrate activity. Subsequently the same group of enzymes were noted to catalyze the oxidative deamination of a number of aliphatic amines and

later the degradation of epinephrine by a similar enzyme was demonstrated.

In 1937 three independent groups concluded that the heretofore separately described enzymes were essentially the same and Zeller suggested that this closely similar group of enzymes be termed monoamine oxidase to distinguish it from diamine oxidase by virtue of its preferential substrates. The substrate specificity between the two enzyme systems is not absolute however.

Substrates of MAO include epinephrine, nor-epinephrine, the aliphatic amines, tyramine, serotonin, and 3, 4, dihydroxyphenylalanine (DOPA). These substrates are oxidatively deaminated according to the general equation: $R-CH_2-NH_2 + O_2 + H_2O \rightarrow R-CHO + NH_3 + H_2O_2$.

The body distribution of the enzyme is wide, highest levels of activity being present in liver, kidney, the aorta, and the gastrointestinal tract. Brain levels of the enzyme are moderate, the highest levels occurring in the hypothalamus and the limbic systems, those areas presumably mediating emotional responses.

MAO is found intracellularly in the mitochondrial fraction of the cell and unlike most mitochondrial enzymes is stable at room temperature. Its activity is destroyed below pH 6.0 and above pH 9-10 and its optimum pH for tyramine degradation is 7.3.

Because of its inactivation by a number of metallic ions a sulphydryl group is most likely present at the active enzyme site.

The mechanism of inactivation of the enzyme by the hydrazine MAO inhibitors is first order, irreversible, has a high energy of activation, and requires the presence of oxygen. Substrates (monoamines) and hydrazines both apparently attach themselves to the same portion of the MAO molecule forming a covalent bond with an electrophilic group—most likely an ACYL group belonging to an aromatic acid. Dehydrogenation then occurs followed in the case of the substrate by deamination and reestablishment of the enzyme bond. In the case of the hydrazines the reaction stops after dehydrogenation with the establishment of a permanent bond between the hydrazine and the active enzyme site.

Once inactivation of the enzyme has occurred the CNS concentration of serotonin and the catecholamines increases, presumably because degradation of the MAO substrates is inhibited to a greater extent than is their formation. Although there is by no means complete agreement the most frequently proposed theories attempt to correlate the laboratory data with clinically observed phenomena hold that the inactivation of the enzyme is of paramount importance in the induction of the psychic energizing

effect. Precisely how changes in the concentrations of these amines might induce changes in the effect remains unexplained and will only be determined when the physiological role of these amines is established.

A large body of information has accumulated to substantiate the thesis that MAO inhibition produces the observed elevation of effect. First of all there is no known substance which produces inhibition of MAO *in vivo* which does not elevate the mood as its predominant CNS effect. Earlier reports in the British literature that 1-Benzyl-1-methyl-5-methoxytryptamine (BAS), a sedative, exhibited potent *in vivo*, MAO inhibiting properties were subsequently found to be in error. Synthesis of the new non-hydrazine MAO inhibitors also argue for the prime importance of MAO inhibition since both of these compounds differ radically in organic structure from the hydrazine derivatives and seem to have little in common except their MAO inhibiting effect and the clinically observed psychic energizing properties. Moreover there has not been described an enzyme sensitive to inhibition by the MAO inhibitors as MAO. Finally the close chemical relationship between iproniazid and isoniazid and the demonstration that the latter inhibits MAO only slightly, and induces euphoria rarely offers additional evidence for the significance of MAO inhibition.

There is also experimental evidence that the secondary elevation in brain serotonin or catecholamine levels may be the medium through which MAO inhibition produces its observed CNS effects. These include the fact that the distribution of serotonin and MAO activity in the CNS are parallel in the brains of dogs and cats having their highest levels in those lower centers speculated to govern emotional tone. Of importance also is the demonstration that 5-hydroxytryptamine is an excellent substrate for MAO. A third point of information favoring this hypothesis is the potentiation by iproniazid of the effects of exogenous amines and their precursors. Finally, MAO inhibitors induce changes in the electroencephalogram (EEG) identical to those produced by both sensory stimulation and administration of one of the amphetamine derivatives, with the exception that in the case of the MAO inhibitor the occurrence of this pattern is delayed and parallels the increase in CNS serotonin concentration. The most obvious explanation of these data is that amphetamine and serotonin exert their actions directly on the same receptor site, amphetamine producing the effect immediately by virtue of this direct action and the MAO inhibitor producing identical changes only after sufficient time has elapsed for the accumulation of excess serotonin.

An earlier hypothesis correlating these data was that serotonin might in some manner function as a neurohumoral substance mediating synaptic transmission in the CNS analogous to the peripheral action of acetylcholine. MAO would then exert its function in a similar manner to cholinesterase and the role of the MAO inhibitor would be similar to the peripheral action of physostigmine. This thesis received some support from Marrazzi's demonstration of the synaptic inhibitory effect of serotonin in the cat. The fact that MAO does not occur in the cell membrane, however, makes the possibility unlikely. Koelles' suggestion that MAO is involved in some phase of neuronal amine metabolism relating to nerve conduction rather than synaptic transmission would appear a more likely possibility.

The fact that both MAO and its substrates occur in the same areas of the CNS and within the same cells must mean that *in vivo*, serotonin exists in some form whereby it is inaccessible to the MAO. Otherwise it would undergo degradation as rapidly as it is formed. Brodie and his co-workers have demonstrated that the administration of reserpine *in vivo* in some manner causes the release of this "bound form" of serotonin and rapidly produces tissue depletion of the substance. This effect is reversed by prior administration of a MAO inhibitor. The clinical parallel to this event is that reserpine's depressant action is also reversed, and a state of intense CNS stimulation is produced. The obvious corollary is that the "free" or "released" form of serotonin is the form in which the substance produces its physiological action and the form necessary for degradation by MAO.

The view that MAO inhibition "protects" the free and active form of serotonin from degradation thereby inducing a rise in its concentration and enhancement of its CNS effect has enjoyed popularity. The problem would appear more complex than this, in view of the fact that measurements of the ratio between the bound and free forms induced by iproniazid and reserpine are inconsistent. Moreover, most of the CNS depressants, including the barbiturates and anticonvulsants, also produce increased total serotonin levels although they produce neither inhibition of MAO or psychic energizing effects. If one assays the brain MAO activity in an experimental animal some time after administration of a MAO inhibitor, complete inactivation of the enzyme may be demonstrated and yet simultaneous serotonin determination may demonstrate almost normal levels. This must mean that alternate metabolic pathways have opened up. This being true, one would expect the brain serotonin levels to revert toward normal regardless of whether the administered MAO inhibitor were to be continued or not, yet clinically the mood

elevating effect of MAO inhibition may be maintained almost indefinitely with administration of a maintenance dose of the inhibitor. Animal assays furthermore show that peak CNS serotonin levels occur rather promptly after administration of a MAO inhibitor, yet it is possible to observe the euphoriant effect of these agents in man only after several weeks of administration.

It is possible to rationalize these observations in a number of different ways: (1) Perhaps the increase in CNS serotonin levels may be causally related to the sympathetic stimulatory effect of these agents observed in animals and not to the psychic energizing effect observed in man while the latter effect is mediated through some as yet unknown substrate of MAO or even through a totally different enzyme system. (2) There may be alterations in the ratio of bound to free serotonin too subtle for detection by present analytical methods. (3) Amine alterations at certain critical areas in the CNS may be of more importance than total brain serotonin or catecholamine alterations. (4) An earlier hypothesis attached physiological significance to the demonstrable CNS depressant action exerted by aldehyde substances formed as intermediate products in the degradation of various catecholamines by the MAO route. Hypothetically inhibition of MAO would prevent the formation of these products perhaps resulting in CNS stimulation.

At any rate, the mechanisms involved in the CNS action of the MAO inhibitors would appear more complex than the straightforward assumption that their euphoriant effect is produced by accumulation of "free" CNS amines secondary to their protection from MAO degradation.

The "paradoxical response" to MAO inhibitors has been used as an objection to the prime importance of MAO inhibition to the CNS actions of these agents. However, experimental data indicate that small amounts of free CNS serotonin produce sedation while larger amounts produce CNS stimulation. The concept has arisen, therefore, that pre-existing levels of CNS amines could result in either CNS stimulation or depression following MAO blockade.

Much of the confusion and apparently paradoxical experimental data may result as Werner has suggested, from a resemblance in physiochemical structure between the active site on the MAO molecule and the active site on the receptor mediating the physiological actions of one or more of the MAO substrates. Accordingly, depending on the degree to which each MAO inhibitor fulfills the structural requirements of either or both of these active sites, direct, enzyme mediated, or a mixture of the two effects may accrue resulting in difficulty in their distinction.

Metabolism of MAO Inhibitors

The *in vivo* metabolism of iproniazid proceeds through two steps. First involved is its oxidative N-2 dealkylation to isoniazid, a possibly significant event in the rarely observed peripheral neuropathy secondary to iproniazid therapy. An alternate pathway involves hydrolytic cleavage at the carbonyl group producing isopropylhydrazine, a potentially toxic substance which is then excreted in the urine. The latter substance is hypothetically the active substance producing MAO inhibition. Good experimental evidence exists for an analogous mode of action for isocarboxazid with the actual MAO inhibition apparently produced by benzylhydrazine. It is possible that idiosyncratic sensitivity to these metabolic products may be the cause of liver damage produced by these agents, analogous to that produced by other hydrazines.

On the other hand, if the isopropylhydrazine portion of the molecule is the active agent, perhaps the rest of the molecule determines its organ specificity and this serves to explain why some of these agents are more toxic to liver, others to hemopoietic tissue, and others to peripheral nerves. Another interesting suggestion relates the hepatotoxic effects of iproniazid to alteration in the intrahepatic blood flow in the direction of diminished blood flow through the central portion of the lobule, and to their observed depressant action on the reticuloendothelial system.

Mesenchymal Effects

The mechanism of the healing effect produced by local application of some of the MAO inhibitors as well as their beneficial effect in the collagen disorders remains totally unexplained. Of possible significance, however, is their antiinflammatory and fibroplastic effect observed in rats after subcutaneous implantation of polyvinyl sponges. Another observation of possible significance is that edema formation following trauma in rats is depressed by many of these agents, through suppression of the normally resultant increase in capillary permeability following trauma. Presumably this effect in turn results from alterations of the metabolism of one of the MAO substrates. This effect is not duplicated by administration of pyrogallol, a specific antagonist of o-methyl-transferase, the enzyme which appears responsible for the inactivation of most of the circulating catecholamines. It has, therefore, been suggested that there is a difference in the metabolic fate of the circulating catecholamines as opposed to those released at local receptor sites. Correlation of these data suggests the possibility that the observed antiphlogistic activity might be secondary to vascular phenomena.

Vascular Effects

On the basis of perfusion experiments with the isolated superior cervical ganglion of the cat, Gertner has demonstrated the ability of iproniazid and β -phenylisopropylhydrazine to block ganglionic transmission. As noted above, the action of these agents would seem the most likely basis for their production of orthostatic hypotension when considered in the light of the concomitant cardiovascular phenomena produced. An additional finding adducing to the importance of this effect is the observation that etryptamine, although it exhibits marked ability to inhibit MAO both in vitro and in vivo induces only mild depression of ganglionic transmission and produces no postural hypotension.

Additional vascular effects include the observed dilation of arterioles and precapillaries with resultant increase in capillary flow demonstrated by Zweifach after intravenous administration of iproniazid. The question remains as to whether this effect merely parallels or is related by common etiology to the above mentioned alterations in the vascular response to trauma.

Potentiation of Other Drugs

Potentiating agents may act in one of two ways: (1) by sensitization of the organism to the effect of the drug similar to the manner by which chlorpromazine reinduces sleep in animals which have recovered from hexobarbital sleep, or (2) by interference with enzymatic pathways for the drug's detoxication.

The hydrazine MAO inhibitors apparently exert some of their potentiating effects by interference with the oxidation of the hexobarbital side chain, the dealkylation of aminopyrine, and amphetamine, and the hydroxylation of acetanilide.

The observed potentiating effect exerted by these

agents on such a variety of drugs as ethanol, the four aminquinoline compounds, the corticosteroids, insulin, ether, narcotics and the cocaine analogues, their alteration of carbohydrate metabolism, their ganglionic blocking properties, and their mesenchymal effects all imply enzymatic alterations of an unknown and obviously important nature.

Other enzyme systems known to be inhibited by the hydrazines, but apparently at greater than physiological concentrations, include succinic dehydrogenase, diamine oxidase, guanidine deaminase, dopa decarboxylase, five hydroxytryptophan decarboxylase, and diphosphopyridine nucleotide.

Particularly encouraging is the observation that, while at physiological concentrations, the hydrazines have been demonstrated to inhibit both yeast alcohol dehydrogenase and glycerophosphate dehydrogenase, tranlycypromine has relatively little effect on these systems. In addition, tranlycypromine apparently inhibits MAO by a different mechanism since it does not require oxygen. Etryptamine does not potentiate hexobarbital sleep in mice, an observation implying its failure to inhibit the oxidation of the hexobarbital side chain, nor does this agent produce ganglionic blockade or inhibit five HTP decarboxylase. Since both of these agents effect inhibition of MAO and both produce the clinically desired elevation of effect the development of similar agents with a narrower range of enzymatic activity hence exhibiting fewer side effects would appear within the realm of possibility.

To quote Dr. Horita, "Whatever the final evaluation may be of the MAO inhibitors as therapeutic agents, they have at least served to introduce drug therapy for a mental disorder, based on an alteration of a definite biochemical process in the brain."

EDITOR'S NOTE: References may be obtained by writing the JOURNAL, 315 West 4th Street, Topeka, Kansas 66603.

NEW FILM AVAILABLE

A new film entitled, "Obesity: Some Highlights of Management," is being made available by E. R. Squibb & Sons, Division of Olin Mathieson Chemical Corporation. The lecture-type film, delivered by Dr. Garfield G. Duncan, Professor of Medicine, University of Pennsylvania, points out that obesity is a leading menace to health and longevity and is one of the greatest challenges in the practice of medicine. Designed for viewing by professional medical audiences, the film highlights some methods employed by Dr. Duncan and his colleagues in the management of obesity. Dr. Duncan is also Director, Medical Divisions, Pennsylvania Hospital and Benjamin Franklin clinic.

The black and white sound film runs 20 minutes and is available at no charge from all Squibb regional offices, or by writing the New York office at 745 Fifth Avenue.

The President's Message

DEAR DOCTOR:

Bishop Fulton J. Sheen of New York and Dr. Edward H. Rynearson of the Mayo Clinic presented a most interesting and challenging program on "The Physician, The Clergy, The Patient" at the annual meeting of the A.M.A. in June. The addresses of these men were very well received by all who attended.

A film entitled "The One Who Heals" was also premiered at the meeting and will be made available to county medical societies and auxiliary groups in Kansas during the year 1963-64.

At the present time programs designed to further ministerial-physician relationships have been initiated in several states by the A.M.A.'s Department on Medicine and Religion. The Society's committee on Relations with Religion will meet in Topeka on September 8 to discuss such a program for Kansas.

In closing may I call your attention to the editorial in this issue dealing with the Congress on Mental Illness and Health which will be held in Topeka on October 24. I urge you to attend this important Congress if at all possible.



H. St. Clair O'Donnell M.D.

President



Editorial COMMENT

First Annual Congress on Mental Illness and Health

The first Kansas Congress on Mental Illness and Health will be held on Thursday, October 24, 1963, at the Hotel Jayhawk in Topeka. The Congress will be combined with the annual meeting of the Kansas Chapter of the American Academy of General Practice, which meets in Topeka on October 24, 25, and 26 and immediately precedes the annual meeting of the Kansas Association for Mental Health which will be meeting on Friday, October 25. We recommend these dates be marked on your calendar and hope each member will find it possible to attend.

Sponsors cooperating with the Kansas Medical Society are the Kansas Chapter of the American Academy of General Practice, the Division of Institutional Management of the Department of Social Welfare, the Kansas Association for Mental Health, and the Kansas Psychiatric Society.

It will be the goal and purpose of the Congress to (1) determine which problems in the field of mental illness in Kansas are most pressing; (2) decide on a priority ordering of these problem areas; and (3) consider proposals and develop plans for carrying out positive programs aimed at alleviating priority problem areas in Kansas.

The Congress will be tied in with the two-year mental health survey and planning project now being conducted by the State Department of Social Welfare. In this regard, those attending will have an opportunity to discuss local needs at one of the nine regional meetings to be held during the morning, with the afternoon devoted to topical discussions. Discussion groups will be dealing with problems in finance, legal aspects, continuing education on a postgraduate level, communicating mental health knowledge, general and private hospitals, to mention a few. Special problems, such as delinquency, aged, alcoholism, and narcotics addiction will also be discussed.

Many Kansas physicians are already working with

other professional and lay people to help with the planning of the Congress.

Members of the Society are urged to attend and provide medical leadership in this important planning endeavor.

The Kansas State Chamber of Commerce

The Kansas Medical Society is a contributing member of the Kansas State Chamber of Commerce. Members of this Society participate actively on the Chamber's Economic Security Council. This is one of fourteen councils or committees within the structure of the State Chamber.

A recent publication from the State Chamber of Commerce lists the general objectives of the Chamber and specific objectives assigned to each of its councils. A few of these are selected to serve as examples showing the aims of this organization.

The State Chamber of Commerce is pledged:

—To promote the economic advancement and general welfare of Kansas and all Kansans.

—To protect personal and economic freedoms and to preserve and improve the American competitive enterprise system.

—To resist vigorously any and all socialistic and communistic trends.

—To impress upon Kansas businessmen the necessity of taking an active interest in public affairs.

—To develop and provide leadership, to mold opinion, and to marshal into one force individual men and separate organizations who are ready to devote themselves to whatever is for the common good.

— . . . All in the interest of increasing jobs, markets and production necessary for a growing and prosperous state and nation.

The Economics Security Council will:

Encourage individual initiative and thrift for greater economic security.

Continue to follow closely all major developments and urge the Kansas viewpoint on all issues pertaining to the various phases of Social Security, including:

(a) Unemployment Compensation; (b) Old Age, Survivors and Disability Insurance; (c) Public Assistance; and (d) Health Insurance.

Work for:

(a) Development of a realistic and equitable workmen's compensation system.

(b) Retention of experience rating and continual improvement in the unemployment compensation system, with emphasis on the greatest possible state control of this system.

(c) Expansion of voluntary pre-payment health insurance programs, as opposed to any compulsory federal health insurance or "socialized medicine" program.

(d) Reduction, wherever possible, of federal financial participation in state social welfare programs as contributory social insurance programs expand in coverage and benefits.

A few examples from the other councils, as the Taxation Council, will continue efforts to eliminate all unnecessary government spending, to insist upon balanced budgets as against deficit spending, and to exert every effort toward economy in state and local governments and support efforts to effectuate sound fiscal policies.

Other councils relate to retail problems, water resources, transportation, industrial development, and so forth.

With objectives so completely in keeping with those of the Kansas Medical Society the physicians of this state might consider their active support of the Kansas State Chamber of Commerce to ensure through joint effort the preservation of the free enterprise system in this country.

Certification of Medical Assistants

The physicians of Kansas, who have so actively supported the organization of medical assistants in the State of Kansas and at the national level, will be pleased to learn that one of the long-range goals of the medical assistants—certification—is about to become a reality. In October, 1963, at Lawrence, Kansas, and at Miami, Florida, the First Annual Certification Examination will be held. Medical assistants from all areas of the United States will participate in this two-day certification testing.

The contents of the examination: Section 1—medical terminology, anatomy and physiology; Section 2—personal adjustment and human relations, medical ethics and etiquette; Section 3—medical law and economics; Section 4—office skills and procedures; Section 5—written and oral communications; Section 6—examination room techniques, sterilization proce-

dures; care of equipment and Section 7—laboratory orientation.

Kansas has the distinction of having the first statewide organization of medical assistants and of having the organization meeting of the American Association of Medical Assistants. The first president of the national organization was a Kansas medical assistant (Miss Maxine Williams, office manager for Drs. Hiebert, Allen, Kubin, Goertz and Armstrong of Kansas City, Kansas) and Miss Marge Slaymaker (Business Manager of the Axtell Clinic) is the present secretary.

If your medical assistant is not now a member of this fine group, we urge you to help her obtain membership in her local organization. The educational programs of these girls will be most beneficial to you and your medical assistant and the cost of membership is low.

HEALTH INSURANCE

In the space of 20 years, the number of people protected by health insurance has gone from one out of every seven in the United States to the present figure of three out of every four persons, according to the Health Insurance Institute.

In 1942, 15 per cent of the U. S. civilian population were protected by some form of health insurance, while at the beginning of this year 76 per cent of Americans were so covered. At the midway point, 1952, some 58.5 per cent of the population had health insurance.

Twenty years ago, only 20 million Americans were covered by hospital expense insurance. Since then there has been a seven-fold increase and over 141 million persons were protected against the cost of hospital care at year-end 1962 by insurance companies, Blue Cross-Blue Shield, and other plans. In 1952, 91 million were insured.

This explosive growth can be attributed to many factors, among which is the public's growing awareness of the value of modern health care and its need to find a mechanism to help prepay the cost of such care. The same type of growth has been shown by other forms of health insurance.

In 1942, over 8 million Americans had surgical expense insurance, but in the following 20 years there was a 16-fold increase and at the end of 1962 over 131 million persons had protection against the cost of surgical bills, the Institute said. In 1952, over 72 million persons had surgical insurance.

Regular medical expense insurance covered a little more than 3 million Americans in 1942. However, there was nearly a 31-fold increase in coverage in 20 years so that more than 98 million persons were covered last year. In 1952, close to 36 million persons were so protected.



Personalities—IN KANSAS MEDICINE

A Kansas congress on mental illness and health will be held in Topeka on October 24. **Austin J. Adams**, Wichita, is head of the committee planning the congress.

Eighty guests were present at a dinner honoring **Lawrence G. Heins** of Abilene, who recently retired after 40 years of medical practice. **H. St. Clair O'Donnell**, Ellsworth, was a special guest at the dinner.

Governor John Anderson has announced the appointment of **Leland Randles**, Fort Scott, as coroner of Bourbon County. The appointment was made in July.

John P. Brockhouse, Emporia, was recently named "Man of the Week" by the *Emporia Gazette*. Dr. Brockhouse has been chosen chairman of the Lyon County Chapter of the American Red Cross, and was a delegate to the 1963 National Red Cross convention in May.

George J. Goodsheller, Marion, has announced his retirement after practicing medicine for 52 years in that community.

Bill L. Gardner, superintendent of Winfield State Hospital, attended the 2nd International Conference on Genetics and Congenital Malformations in New York City in August.

Anthony F. Rossitto, Wichita, was awarded a fellowship for study in x-ray gastroenterology at the University of California Medical Center. The fellowship was effective the first of July.

Charles D. Litton and his family have moved from Winfield to Salt Lake City, Utah, where he has been granted a two-year residency in anesthesiology at the University of Utah.

One of Kansas' oldest living physicians, **John D. Hunter**, was honored by his family and friends on the occasion of his 90th birthday in July. Dr. Hunter, who now lives in Hutchinson, practiced in Fort Scott until his retirement in 1959.

Ned W. Smull of Prairie Village has been named director of Children's Mercy Hospital in Kansas City, and will assume his new duties in October. He will also be chairman of pediatrics at the hospital.

Robert P. Hudson, Kansas City, has been granted a leave of absence from the University of Kansas to accept a fellowship for graduate study at Johns Hopkins University. He will take work leading to a master's degree in the history of medicine. Dr. Hudson has been assistant dean of the K.U. School of Medicine.

Vernon L. Kliever, who formerly practiced in Wichita, has completed a three-year residency in psychiatry at the Mental Health Institute, Independence, Iowa, and has now begun a two-year fellowship in child psychiatry at the Children's Service Center of Wyoming Valley in Wilkes-Barre, Pennsylvania.

Evalyn S. Gendel, assistant director of the Maternal and Child Health Division, Kansas State Department of Health, participated in the 15th annual Community Health Education Workshop at Ames, Iowa, in July.

Chester W. Haines, Haven, was among those from Kansas who participated in a People-to-People goodwill tour of European farms in August. The group visited Belgium, England, Poland, Hungary, Germany, and Russia and attended interviews, visitations and receptions with the United States and foreign government authorities.



Blue Shield

Blue Shield Charge Survey Completed

How can Blue Shield best evaluate the adequacies of its present fee schedules compared to present charges? How can new programs be developed with allowances more closely aligned to fee patterns?

To answer these questions has always required that Blue Shield have something which until now it has lacked—reasonably valid data on charge patterns that can be used to analyze the sufficiency of allowances.

Blue Shield hopes that it has taken a first step in this direction with the recent completion of the 1962 Physician's Charge Study. The Physician's Charge Study is the first exhaustive attempt to compile statistics on charge patterns for all Blue Shield coverage areas—including surgery, in-hospital medical care, anesthesia, radiology, and obstetrics. Data was derived for charges on every covered service as reported by Kansas physicians on billings made to Blue Shield during 1962. Electronic tabulation developed not only frequencies of service and distribution of charges but also derived mean, mode, and median figures for each specific service.

Statistics are statewide in nature. No breakdown by locality or region was made.

What this means to Blue Shield is significant. It is now possible to evaluate by procedure how well Blue Shield is meeting the actual charges of physicians. Identification of fee schedule inequities relative to charges can be made with greater validity. Comparisons of fee schedule adequacy between specialty areas can be developed with more assurance.

In the future development of programs such information is especially valuable. Ranges and frequency distributions established in the study can be used to determine percentile figures which Blue

Shield will be able to utilize in building allowance schedules for given coverage levels. If later charge studies are completed, the basis for comparative analysis will be available which might provide information upon which fee schedule adjustments can be handled.

The first use being made of the 1962 Physician's Charge Study is in a present project aimed at correcting certain inequities in present Blue Shield Schedules 1, 2, and 3. Although work has just begun on this project, the data available through the charge study has already proved valuable.

It is hoped that the survey's information will be found increasingly useful during coming months in Blue Shield's efforts to better serve physicians through fee schedule improvement and program development.

BASIC SCIENCE EXAMINATION

The Kansas Board of Basic Science Examiners will give examinations in the subjects of anatomy, bacteriology, chemistry, pathology and physiology on Nov. 29-30, 1963, at the University of Kansas Medical Center, Kansas City, Kansas. Satisfactorily completed applications for examination should be submitted at least 30 days prior to date of examination. Application blanks and other information can be obtained from Dr. L. C. Heckert, Secretary, Kansas Board of Basic Science Examiners, Pittsburg, Kansas.



Book REVIEWS

SHOCK: PATHOGENESIS AND THERAPY—AN INTERNATIONAL SYMPOSIUM, Springer-Verlag, Berlin, Gottingen, Heidelberg, 1962. 387 pages illustrated.

This is a survey of all the basic aspects of shock presented as a series of papers interposed with discussion of the participants. The essays were prepared by a balanced talented panel of basic scientists and clinicians. Many of them show a wealth of experience in shock from both the clinical and laboratory aspects. The papers by Dr. Lillehei and Dr. Nickerson probably present the clinical problems of greatest interest to the practicing physician seeking the latest in therapeutic concepts. Most of the papers are geared for a complete and critical review of the whole subject. Consequently they are often involved with details of fundamental basic science which will confuse the ordinary clinician. The complexity of some of the diagrams is most discouraging. The book may seem too obscure to the readers seeking only to brush up in this vital area and at the same time too elementary to physiologists, pathologists and clinical specialists who have developed a familiarity with the shock literature.

"Shock" is a term defying definition, yet including a variety of vaguely related syndromes of vital significance to many seriously sick patients. The condition is found in most types to be "reversible" to a point. Up to this point the routine therapeutic methods of blood volume replacement and pressor drug administration produce satisfactory results. At a certain level the blood flow through different organs, especially heart, kidney and nervous system, may assume differentially reduced flow rates resulting in malfunction of one or more of these organs. This is not always corrected by restoring the blood pressure and circulating volume to normal. This seems to be the beginning point of "irreversible shock." This sequence is common to all the leading etiologies of shock: hemorrhagic, toxic, traumatic, cardiac, allergic, etc. Dr. Nickerson's work is receiving ever-increasing recognition in suggesting that the restoration of a

normal blood pressure should not be the essential aim of therapy. Oftentimes pressor drugs will augment the ischemia of an already poorly functioning organ where a blocking agent, such as Dibenzylamine, might by vasodilatation correct the ischemia. Unfortunately the clinical criteria for using vasodilator drugs are not clear. The exact indications for a change from vasopressor to vasodilating drugs must be defined before this technique will be applied clinically in the emergency room, operating room or wards of hospitals. The use of steroids is well discussed. The massive doses advocated by Dr. Lillehei for all types of shock received different interpretation by Dr. Nickerson, who feels that convincing clinical evidence for their use is present only in toxic shock. Their general use in hemorrhagic, traumatic and other nontoxic forms of shock is questioned by him.

Probably all clinicians, especially surgeons, can profit from a review of shock problems. A vote of thanks is due the Ciba Company for holding this seminar and publishing its proceedings.—R.P.W.

ATLAS OF ANATOMY, 5th Edition, J. C. Boileau Grant. The Williams and Wilkins Co., Baltimore, 1962. 665 illustrations. \$15.00.

Grant's Atlas of Anatomy has been for several years one of the standard tools in some of the dissecting laboratories of the English-speaking world. It also has been a constant help and guide to many physicians, be he internist or surgeon. The fifth edition will be even more attractive and useful than those of the past. The format is completely new. The title page illustration, "The Anatomy Lesson of Dr. Nicholas Tulp" by Rembrandt van Rijn is a mezzotint from the Bettman Archives. This same illustration adorns the lower third of the book front.

The 665 illustrations that truly make this book so useful were executed not from an artistic point of view (however, the artistry is superb), but from the standpoint of accuracy of the dissected specimen. Each specimen was posed and photographed. From these

photographs, by special techniques and artistic editing, correct shapes, positions and relative proportions are ensured. This presentation prevents liberty with the material that sometimes distorts anatomical facts. The illustrations profess a considerable accuracy of detail so necessary for practical application.

Pages are not numbered. This in no way detracts from the usefulness of the information. The illustrations are given according to regions which are telescoped into the seven anatomical subdivisions of the human body. With the aid of the index no trouble is encountered in locating any anatomical structure with its related parts, whether it is superficial or deep. This new approach will no doubt meet with considerable approval both in practice and certainly in academic circles.—*P.G.R.*

ELECTROCARDIOGRAPHY, Louis Wolff, M.D. W. B. Saunders Company, Philadelphia, 1962. Third Edition, illustrated, 351 pages, \$8.50.

This book is designed to teach the fundamentals as well as the clinical application of electrocardiography. The present edition has been revised in several respects, namely: (1) by the application of recent knowledge gained through vectorcardiography to the interpretation of electrocardiograms with special emphasis on diagnostic criteria; (2) by including a critical appraisal of the diagnostic criteria for ventricular hypertrophy and bundle branch block; (3) inclusion of further important and interesting observations on pulmonary embolism, deranged electrolyte patterns, and arrhythmias, with particular regard to those occurring in digitalis intoxication.

The book thoroughly reviews the basic principles of electrocardiography in the first 90 pages. The remainder is devoted to clinical electrocardiography and the cardiac mechanism.

Each topic is well illustrated with clearly reproduced EKG tracings. The interpretations of the tracings as well as the reasoning behind them is found in the main text.

For quicker reference, a briefer interpretation is printed below each illustration.

Pertinent clinical data regarding the patients his-

tory, medications, and course are included in the discussion to maintain the reader's interest and understanding.

An entire chapter is devoted to the normal EKG and its many normal variants. Normal value data tables for all ages including the newborn and infant are included.—*V.E.R.*

CLINICAL BIOCHEMISTRY. Sixth Edition, Abraham Cantarow, M.D. and Max Trumper, Ph.D. W. B. Saunders Co., Philadelphia. 776 pages illustrated, \$13.00.

In the 30 years since the first edition of this book appeared biochemistry has progressed from a rudimentary science dealing mainly with nutrition and some limited aspects of clinical chemistry to its present status as the very foundation of physiology, pharmacology, pathology and clinical medicine. Progress in this science has been so great that graduates of only four or five years ago find themselves hopelessly out of date unless they make a determined and continued effort to keep up with the literature.

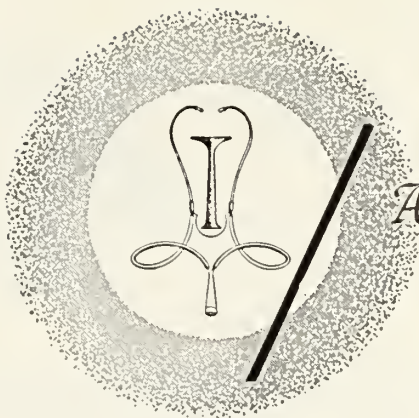
The book is intended for both students and practitioners (continuing students) and has definite clinical orientation as indicated in the title. Some of the more intricate chemical aspects of the subject are presented rather briefly so that the volume has been kept to a modest size. Professors of biochemistry may find that such treatment makes it undesirable as a textbook, but practicing physicians who are looking for clinically useful information should appreciate this approach.

In addition to the traditional sections on carbohydrate, lipid and protein metabolism are chapters dealing with the metabolism of calcium and inorganic phosphate, magnesium, iron, water and electrolytes and acid-base balance—to name only a few. Additional chapters of clinical interest include those on enzymes, vitamins, gastric function, liver function, endocrines and many others.

The book is well made, and is well illustrated with charts, graph and tables. Each chapter is followed by a list of appropriate references, and the 83 page index is quite adequate.—*J.D.R.*

CHANGES OF ADDRESS

Members of the Kansas Medical Society will receive the JOURNAL and correspondence from the Executive Office promptly only if correct addresses are on file. Report changes to Kansas Medical Society, 315 West Fourth Street, Topeka, Kansas.



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the DOCTOR'S CALENDAR. Notice of the session is posted in advance to allow the physician time to make preparations.

SEPTEMBER

- Sept. 27-
Oct. 5 American Society of Clinical Pathologists, Chicago. Contact: Eleanor F. Larson, Exec. Sec., 445 Lake Shore Drive, Chicago 11.
- Sept. 30-
Oct. 2 Kansas City Southwest Clinical Society, Kansas City, Mo. Contact: W. A. Slentz, M.D., 3036 Gilham Road, Kansas City 8, Mo.

OCTOBER

- Oct. 1-4 Animal Care Panel 14th Annual Meeting, Los Angeles. Contact: Joseph J. Garvey, 4 E. Clinton St., Joliet, Ill.
- Oct. 5-11 Annual Otolaryngologic Assembly—postgraduate and clinical program. Contact: Dept. of Otolaryngology, University of Illinois College of Medicine, 1853 W. Polk St., Chicago 12.
- Oct. 13-19 17th World Medical Assembly, New York City. Contact: The World Medical Assn., 10 Columbus Circle, New York 19.
- Oct. 21-22 *Unusual Forms and Aspects of Cancer in Man*—American Cancer Society, New York City. Contact: Dir. of Professional Education, American Cancer Society, 521 W. 57th St., New York 19.
- Oct. 24 1st Kansas Congress on Mental Illness and Health, Jayhawk Hotel, Topeka.
- Oct. 24-26 Kansas Chapter of the American Academy of General Practice. Jayhawk Hotel, Topeka.
- Oct. 25 Kansas Association for Mental Health. Jayhawk Hotel, Topeka.
- Oct. 28-
Nov. 1 Annual Clinical Congress of the American College of Surgeons, San Francisco. Contact: American College of Surgeons, 40 E. Erie St., Chicago 11.

POSTGRADUATE COURSES

- American College of Physicians postgraduate courses:
- Oct. 7-11 *Recent Advances in Basic Mechanisms in Internal Medicine*, Ann Arbor, Mich.
- Oct. 21-25 *Common Problems in Endocrinology and Metabolism: Basic Concepts and Clinical Application*, Milwaukee.
- Oct. 28-
Nov. 1 *Allergy and Hypersensitivity States*, Chicago.
- Registration forms and requests for information on the above courses should be directed to: Edward C. Rosenow, Jr., M.D., Exec. Dir., The American College of Physicians, 4200 Pine Street, Philadelphia 4.
- University of Kansas School of Medicine postgraduate courses:
- Sept. 26-28 *Immediate Care of the Sick and Injured.*
- Oct. 3-4 *The Eye in Physical Diagnosis.*
- Oct. 9-11 *Aviation Medicine.*
- Oct. 17 *School Health.*
- Oct. 28-30 *Gynecology and Obstetrics.*

For information on the above courses, contact The Department of Postgraduate Medical Education, University of Kansas School of Medicine, Rainbow Boulevard at 39th Street, Kansas City, Kansas.

- Oct. 14-18 *Recent Advances in the Diagnosis and Treatment of Diseases of the Heart and Lungs*—Washington, D. C. Contact: Murray Kornfeld, American College of Chest Physicians, 112 E. Chestnut St., Chicago 11.
- Oct. 21-25 *Clinical Cardiopulmonary Physiology*—Chicago. Contact: Murray Kornfeld, American College of Chest Physicians, 112 E. Chestnut St., Chicago 11.
- Oct. 24-26 Annual course in postgraduate gastroenterology, The American College of Gastroenterology, Washington, D. C. Contact: American College of Gastroenterology, 33 W. 60th St., New York 23.



WALTER W. MILLER, M.D.

Walter W. Miller, 93, died on July 30, 1963, at his home in Osborne.

He was born at Hutton Valley, Missouri, on August 31, 1870, and moved with his family to Osborne County, Kansas, in 1890. During his first years in Kansas, he taught school and served as Superintendent of Schools of Osborne County for four years. In 1904 he entered the University of Kansas School of Medicine and received his medical degree in 1908. He returned to Osborne to practice and continued his work there for 53 years.

Dr. Miller was a member of the Osborne Masonic Lodge, and the Isis Shrine of Salina. He was a member of the Osborne Board of Education for several years.

HUGH R. ST. JOHN, M.D.

Hugh R. St. John died on July 11, 1963, at St. Joseph's Hospital in Concordia. He was 85 years old.

Born at Worchester, Wisconsin, on March 10, 1878, he was graduated from the Kansas City Medical College in 1900. He practiced in Alton before moving to Concordia in 1913. After becoming established in Concordia, Dr. St. John took postgraduate work in surgery in hospitals in Europe.

He was a member of St. John's Lodge, Royal Arch Masons, Hiram Council, and Elks Lodge, and was a past master of the Alton Masonic Lodge at Alton.

EMMERICH SCHULTE, M.D.

Emmerich Schulte, 63, died on July 26, 1963, at his home in Kansas City, Kansas.

Born in Schmallenberg, Germany, Dr. Schulte came to the United States when he was 28 years old. He attended the Kansas City Junior College, later enrolled at the University of Kansas School of Medicine and received his medical degree in 1935. After practicing for two years in Arkansas, he returned to Kansas City, Kansas, and continued his practice there until his death.

Dr. Schulte served in the United States Army during World War II. He was on the staff of St. Margaret and Bethany hospitals and a member of the Catholic church.

MICHAEL W. SCIMECA, M.D.

Michael W. Scimeca, 46, of Caney, died on July 12, 1963, in Columbus Hospital, Buffalo, New York.

He was born March 23, 1917, in Chicago and moved to Caney with his family in 1930. He attended Coffeyville College, St. Benedict's College at Atchison, Creighton University in Omaha, the University of Kansas, and was graduated in 1947 from the University of Arkansas Medical School.

Dr. Scimeca was a veteran of World War II. He was a member of the Presbyterian church, American Legion, Lions Club and other civic organizations in Caney.

The Kansas Medical Society—1963-1964

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Washington.....	D. A. Bitzer, Washington.....	L. L. Huntley, Washington
Wilson.....	Lynn E. Beal, Fredonia.....	C. E. Stevenson, Neodesha
Woodson.....	A. C. Dingus, Yates Center.....	H. A. West, Yates Center
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Familial Goiters

Assistance in the Study of Thyroid Hormone Synthesis

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IN THE PAST 15 years numerous advances have been made in the understanding of thyroid physiology. These advances have been possible primarily through the use of radioactive iodine and paper chromatography. A definite sequence of biochemical reactions in the synthesis of the thyroid hormones has been clearly demonstrated. Fortunately, patients with familial goiters have provided clinical verification of these reactions.

The purpose of this paper is to briefly review the presently accepted concepts of thyroid hormone synthesis and then utilize these concepts in a discussion of familial goiters. For those stimulated to further reading, excellent detailed reviews of this subject are available.^{1, 2}

Thyroid Hormone Synthesis

The only known function of the thyroid gland is to synthesize, store and secrete two hormones: thyroxine and 3,5,3-triiodothyronine. Failure to provide the body with sufficient amounts of these hormones will result in compensatory hyperplasia of the thyroid gland through the feedback system of the anterior pituitary gland.

The most important substrate for thyroid hormone

synthesis is iodine. Iodine is absorbed through the gastrointestinal tract as inorganic iodide, and readily distributed through the extracellular fluid. It is loosely attached to proteins in the plasma. The thyroid and the kidney compete in removing the iodide from

The biochemical sequence in thyroid hormone synthesis has been reviewed, and the five types of familial goiters discussed. By providing clinical verification of the steps in thyroid hormone synthesis, patients with familial goiters have greatly increased our understanding of thyroid physiology. Hopefully, further study of patients with familial goiters will provide not only the exact mechanism of the defects observed, but also an explanation for all types of goiters.

the plasma. Under normal conditions, approximately two-thirds of the ingested iodide is removed by the kidneys and one-third removed by the thyroid.

The *first* step in the synthesis of the thyroid hormones (*Figure 1*) is the selective accumulation of inorganic iodide by the epithelial cells of the thyroid gland. This reaction has been called "iodide trap-

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THYROID HORMONE SYNTHESIS

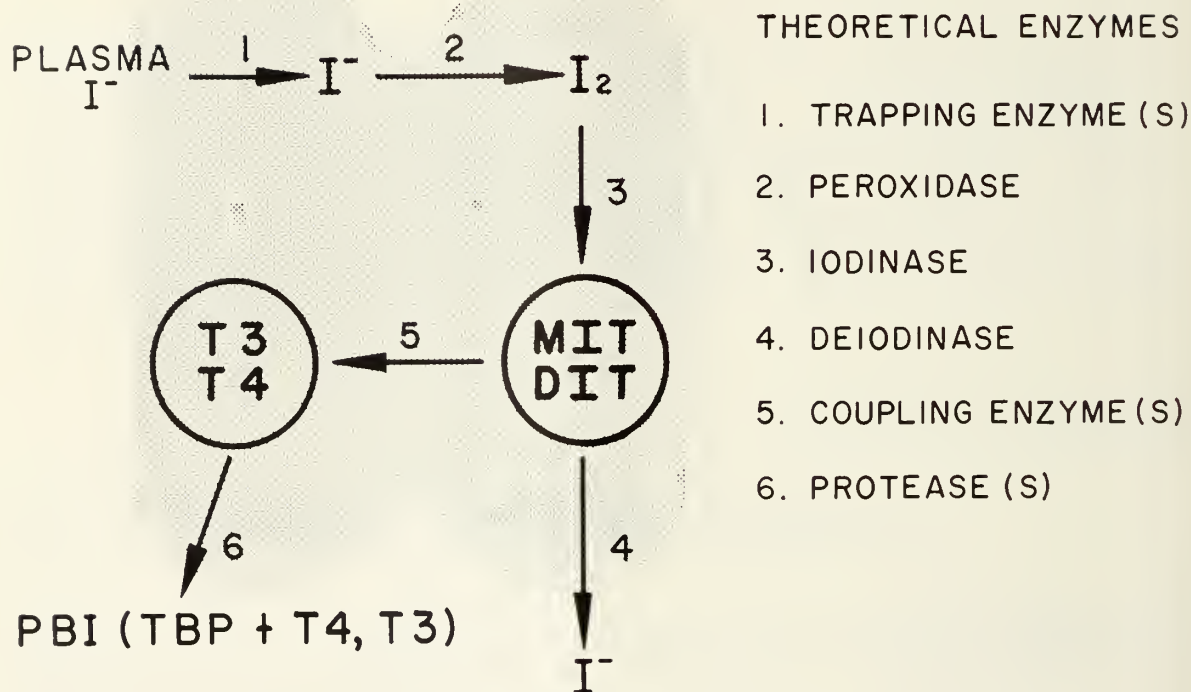


Figure 1 outlines the major steps in thyroid hormone synthesis and the theoretical enzymes involved. Encircled compounds are in peptide linkage with thyroglobulin. I^- = iodide, I_2 = iodine. MIT = monoiodotyrosine, DIT = Di-iodotyrosine. T3 = triiodotyrosine, T4 = thyroxine. PBI = protein bound iodine. TBP = thyroid binding proteins.

ping." The mechanism of the reaction is unknown, but it is probably enzymatically controlled.

By this trapping mechanism, the normal resting thyroid maintains an iodide concentration 20 times that of plasma. In the hyperplastic gland this ratio may be increased several hundred times. In spite of the concentration gradient, the inorganic iodide of the gland is in free and ready exchange with the plasma iodide.

The second step in the synthesis of the thyroid hormone is the organification of iodine. This step probably consists of two reactions, the oxidation of iodide to iodine and the iodination of tyrosine. Once trapped in the gland, the inorganic iodide is almost immediately oxidized and transferred to the tyrosine molecule. Thus, in the normal gland only one to two per cent of the iodine present at any time is in the inorganic iodide state.

The mechanism of organification is still uncertain, but the presently accepted theory is that a peroxidase is responsible for the oxidation of iodide to iodine and an iodinase responsible for the iodination of tyrosine. These reactions occur while the tyrosine

molecules are in peptide linkage within the larger thyroglobulin molecule. In the normal thyroid labeled MIT and DIT are formed simultaneously very rapidly after the administration of I^{131} .

The third step in thyroid hormone synthesis is the coupling of two molecules of iodotyrosine and the removal of an alanine side chain. This reaction also occurs while the amino acids are in peptide linkage. T-3 is formed by the coupling of one molecule each of mono and diiodotyrosine, and T-4 by the coupling of two molecules of diiodotyrosine. The mechanism of this reaction is also unknown, but one or more coupling enzymes are thought to be required.

Within the thyroid gland thyroglobulin provides the framework in which thyroid hormone synthesis takes place and thyroid hormone storage is provided. The exact structure of the thyroglobulin molecule is unknown. It is a glycoprotein with a molecular weight of approximately 650,000.

Before stored thyroid hormones can be released into the circulation, thyroglobulin must be broken down. Under normal circumstances no thyroglobulin has been demonstrated in the blood. The degradation

of thyroglobulin is brought about by proteolytic enzymes, the proteases and peptidases. These enzymes release thyroxin and triiodothyronine into the circulation.

MIT and DIT are also released from their peptide linkage to thyroglobulin by these proteolytic enzymes. These compounds do not reach the circulation, however, because the potent deiodinase within the parenchymal cells of the thyroid deiodinates them first. Both the iodide and the tyrosine released by this reaction are reutilized in thyroid hormone synthesis.

Thyroid hormones are carried in the plasma in association with carrier proteins. The majority of the T-4 is carried by the inter alpha globulins. Smaller amounts of T-4 are carried by albumin and pre-albumin. T-3 is carried by the inter alpha globulins and albumin, but not by pre-albumin. The affinity of the carrier proteins for T-3 is much less than for T-4. Thus, T-3 by leaving the serum and entering the cells more quickly than T-4 has a more rapid clinical effect than T-4.

The thyroid hormones are degraded in the peripheral tissues through several pathways, glucuronide and sulfate conjugation, deamination, transamination and deiodination. All of these can take place in the liver, but skeletal muscle, for example, can only deiodinate thyroid hormone. The iodide released by the degradation of the hormones is either excreted by the kidneys or taken up by the thyroid.

As can be seen, the various steps in thyroid hormone synthesis are dependent on specific enzyme systems. Defective function in any of these enzyme systems will partially or completely block the production of thyroid hormone. In the case of familial goiters, this is precisely what happens.

Types of Familial Goiters

Five distinct metabolic disorders of thyroid hormone synthesis are now recognized. These five constitute what have been termed "familial goiters." They are: the trapping defect, the organification defect, the deiodinase defect, the coupling defect, and the butanol inextractable iodine state (*Figure 2*).

The *trapping defect* is characterized by an inability of the thyroid epithelial cells to accumulate iodide so as to maintain an iodide concentration 20 times that of the plasma. This defect has been found in only one patient,³ a 15-year-old boy who had three consanguineous marriages in his family and six relatives with goiters. His I^{131} uptake was only 11 per cent at 24 hours. His PBI was 0.5 ug. per cent. His salivary:serum iodide was only 1:1 whereas the normal ratio is 20:1. The iodine content of his thyroid gland was extremely low. When he was treated with large doses of KI, his goiter decreased in size and his hypothyroid symptoms subsided. The purpose of

this treatment was to force more iodide into the thyroid gland by raising the serum iodide level approximately 20 times normal.

The *organification defect* is characterized by a delay in the oxidation of iodide to iodine and the iodination of tyrosine. Inorganic iodide, therefore, accumulates in the thyroid gland. Thiocyanate or perchlorate ions have the capacity to discharge inorganic iodide from the thyroid, but will not effect iodine chemically bound to tyrosines. Thus, the increased inorganic iodide in the thyroid in this condition is rapidly discharged by perchlorate or thiocyanate. For a patient to be included in this category, most authors require a drop in the radioactivity over the thyroid gland of more than 10 per cent following thiocyanate or perchlorate. This defect has been observed in goitrous cretins,⁴ in patients receiving thiouracil drugs,⁵ patients with Pendred's Syndrome,⁶ patients with Hashimoto's thyroiditis,⁷ and patients with nodular goiters who have a family history of goiter.⁸

The *deiodinase deficiency* is characterized by a deficiency of deiodinase not only in the thyroid cells, but also in the liver, kidney and other organs. This fact is used in diagnosing the condition. After receiving radioactive DIT intravenously, the patients with this defect excrete in their urine in the first four hours more than 8 per cent of the DIT as DIT.⁹ Normally, the kidneys would deiodinate the DIT and excrete only radioactive iodide. Because of a deficiency of deiodinase in the thyroid gland, MIT and DIT are able to reach the circulation. The loss of these iodotyrosines in the urine seems to explain why most of the patients with this defect are hypothyroid.

The *coupling defect* is characterized by a partial block in the coupling of iodotyrosine to iodothyronines. Except for the trapping defect, the defect in coupling represents the least common of the enzymatic blocks. Although the amounts of MIT and DIT in the thyroid gland are increased, these compounds do not find their way into the serum because the deiodinase system within the gland is able to take care of greatly increased amounts of iodinated tyrosines. It is of interest that methimazole (tapazole) will increase the release of labeled iodine from the thyroid gland by blocking the utilization of iodide through the internal recycling mechanism.¹⁰ Instead of being utilized in thyroid hormone synthesis, the blocked iodide is excreted in the urine. The minimum criterion for the diagnosis of this defect is the presence of large amounts of MIT and DIT, and small amounts of T-3 and T-4 in the thyroid gland removed more than three days after the administration of labeled iodine.¹ In the normal thyroid gland 25 to 50 per cent of the iodine is present as T-4 and

	<i>Trapping Defect</i>	<i>Organification Defect</i>	<i>Deiodinase Deficiency</i>	<i>Coupling Defect</i>	<i>Butanol Inextractable Iodine State</i>
I^{131} uptake	Low	Rapid and high	Rapid and high with rapid release	Rapid and high with slow release	Rapid and high
PBI	Low	Low or normal	Low or normal	Low, normal or high	Low, normal or high
Abnormal circulating iodinated compounds	0	0	MIT and DIT	Occasionally MIT and DIT	Butanol insoluble iodinated compounds
Special Studies	Salivary serum iodide 1:1 (normal 30:1) Low iodine content of biopsy specimen	KSCN or $KClO_4$ will wash out inorganic iodide from the thyroid	Labeled DIT IV will be excreted as DIT	Tapazole will increase release of labeled iodine from the thyroid Large amounts of MIT and DIT and small amounts T-3 and T-4 in thyroid removed more than 3 days after administration of labeled iodine	Chymotrysin hydrolysis of serum increases the butanol solubility of these compounds

Figure 2

T-3, whereas in the coupling defect only trace amounts of T-4 and T-3 are found.

The *butanol inextractable iodine state* is less well defined than the other defects. It is characterized by the presence of iodinated compounds in the peripheral blood which are insoluble in acid butanol and are calorigenically ineffective. Since amino acids are soluble in butanol, and polypeptides and proteins are not soluble in butanol, these inextractable compounds are thought to be iodinated polypeptides or proteins. After giving a normal individual I^{131} , more than 85 per cent of the radioactivity in the serum is extractable with acid butanol.¹¹ If less than 85 per cent is extractable, the butanol inextractable iodine state exists. The mechanism of this defect is unknown, but the presently accepted theory is that these patients have either a defect in thyroglobulin synthesis or a defect in the proteolytic degradation of thyroglobulin. This state has been seen not only in congenital goiters,¹² but also in some patients with thyroid carcinoma,¹³ Hashimoto's thyroiditis,¹⁴ subacute thyroiditis,¹⁵ nodular goiter,¹⁶ and thyrotoxicosis.¹⁷

How can familial goiters be recognized from among the many goiters seen in daily practice? *Figure 3* gives the major points in screening familial goiters. Obviously the patient should have a goiter and ideally should have a family history of thyroid disease. Although most of the patients in the literature have been cretins or hypothyroid many have been euthyroid. The presence of a euthyroid status, therefore, does not rule out the possibility of a familial goiter. The PBI's are quite variable and depend on the degree of compensation of the thyroid

SCREENING FOR FAMILIAL GOITERS

1. Goiter
2. Family history of thyroid disease
3. Cretin, hypothyroid, or euthyroid
4. High I^{131} uptake (except trapping defect)
5. Low, normal, or high PBI's

Figure 3

gland. Except for the single case described with the trapping defect, all the familial goiters have had high I^{131} uptakes. Thus, a patient with a goiter who has a high I^{131} uptake and is not hyperthyroid should be suspected of having one of the types of familial goiter.

References

1. Stanbury, J. B., Wyngaarden, J. B. and Fredrickson, D. S.: *The Metabolic Basis of Inherited Disease*. New York, 1960, McGraw-Hill Book Company, Inc., Pages 273-320.
2. Stanbury, J. B. and McGirr, E. M.: Sporadic or Non-Endemic Familial Cretinism with Goiter. *Am. J. Med.* 22: 712, May 1957.
3. Stanbury, J. B. and Chapman, E. M.: Congenital Hypothyroidism with Goitre. Absence of an Iodide-Concentrating Mechanism. *Lancet* 1:1162, May 28, 1960.
4. Stanbury, J. B. and Hedge, A. N.: A Study of a Family of Goitrous Cretins. *J. Clin. Endocr.* 10:1471, Nov. 1950.
5. Stanley, M. M. and Astwood, E. B.: The Accumulation of Radioactive Iodide by the Thyroid Gland in Normal and Thyrotoxic Subjects and the Effect of Thiocyanate on Its Discharge. *Endocrinology* 42:107, Feb. 1948.
6. Morgans, M. E. and Trotter, W. R.: Association of Congenital Deafness with Goitre. *Lancet* 1:607, Mar. 22, 1958.
7. Morgans, M. E. and Trotter, W. R.: Defective Organic Binding of Iodine by the Thyroid in Hashimoto's Thyroiditis. *Lancet* 1:553, March 9, 1957.
8. Floyd, J. C., Beierwaltes, W. H., Dodson, V. N. and Carr, E. A., Jr.: Defective Iodination of Tyrosine, A Cause

- of Nodular Goiter? *J. Clin. Endocr.* 20:881, June 1960.
9. Stanbury, J. B., Kassenaar and Meijer, J. W. A.: Fate of Mono- and Di-iodotyrosine in Normal Subjects and Patients with Various Disease. *Jr. Clin. Endocr.* 16:735, June 1956.
 - Ibid.* The Metabolism of Mono- and Di-iodotyrosine in Certain Patients with Familial Goiter, *Jr. Clin. Endocr.* 16:848, July 1956.
 10. Stanbury, J. B., Ohela, Kalervo and Pitt-Rivers, Rosalind: The Metabolism of Iodine in 2 Goitrous Cretins Compared with That in 2 Patients Receiving Methimazole. *Jr. Clin. Endocr.* 15:54, Jan. 1955.
 11. DeGroot, L. J., Postel, Sholem, Litvak, Jorge and Stanbury, J. B.: Peptide-Linked Iodotyrosines and Iodothyronines in the Blood of a Patient with Congenital Goiter. *Jr. Clin. Endocr.* 18:158, Feb. 1958.
 12. DeGroot, L. J. and Stanbury, J. B.: The Syndrome of Congenital Goiter with Butanol-Insoluble Serum Iodine. *Am. J. Med.* 27:586, October 1959.
 13. Robbins, Jacob, Rall, J. E. and Rawson, R. W.: A New Serum Iodine Component in Patients with Functional Carcinoma of the Thyroid. *Jr. Clin. Endocr.* 15:1315, Nov. 1955.
 14. Owens, C. A., Jr. and McConahey, W. M.: An Unusual Iodinated Protein of the Serum in Hashimoto's Thyroiditis. *Jr. Clin. Endocr.* 16:1570, Dec. 1956.
 15. Ingbar, S. H. and Freinkel, Norbert: Thyroid Function and Metabolism of Iodine in Patients with Subacute Thyroiditis. *A.M.A. Arch. Int. Med.* 101:339, Feb. 1958.
 16. Dowling, J. T., Ingbar, S. H. and Freinkel, Norbert: Abnormal Iodoproteins in Blood of Eumetabolic Goitrous Adults. *Jr. Clin. Endocr.* 21:1390, Nov. 1961.
 17. Stanbury, J. B. and Janssen, M. A.: The Iodinated Albuminlike Component of the Plasma of Thyrotoxic Patients. *Jr. Clin. Endocr.* 22:978, Oct. 1962.

NEW DRUGS AND THE PRACTICING PHYSICIAN

When the physician observes a significant reaction to a drug, he should inform the Council on Drugs of the American Medical Association, which keeps records of untoward reactions and makes reports periodically. He should also inform the manufacturer, who can watch for reports of similar reactions, warn physicians to modify the dose or method of administration, or withdraw the drug from the market if necessary. In addition, the Federal Food and Drug Administration can be notified since they have the power to remove a toxic drug from the market. In the final analysis, it is the practicing physician who must make the decision whether or not to use a new drug on the particular patient.—Harry F. Dowling, M.D., in *J.A.M.A.*, July 27, 1963.

Thyroid Disease

Evaluation of the Six-Hour I^{131} Uptake Test For the Diagnosis of Thyroid Disease

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THE SIX-HOUR I^{131} uptake has been used by some investigators for evaluation of the functional status of the thyroid gland from the time this isotope was first used clinically.^{1, 2} More recently, however, the 24-hour uptake has enjoyed an increasing popularity in thyroid studies.^{3, 4} Very recently support for the six-hour test has again appeared in the literature.⁵

The 24-hour procedure, of course, necessitates the return of the patient to the laboratory on the day after the test dose has been administered and doubles the work done by the technicians. If the test could be accomplished in one day, with satisfactory results in the diagnosis of thyroid disease, a considerable saving of technicians' time and increased convenience to the patient would result.

We, therefore, decided to review our cases and compare the results of the six-hour uptake as opposed to the 24-hour uptake to see if the six-hour method would prove to be as good as, or superior to, the 24-hour method as a test of thyroid function.

Method

I^{131} uptake studies at Wesley Medical Center are done by excluding excessive salt and fish from the diet for 24 hours preceding the test. On the day of the test a brief history is taken and a physical examination for obvious signs of thyroid disease is made.

In adults, a dose of approximately $\frac{1}{2}$ μ c. per pound of body weight up to 100 μ c. is given orally in capsule form. Six hours later the uptake is measured with a Reed-Curtis "Probitron" Model FAX-16-X rate meter after standardizing with I^{131} from the same lot as administered to the patient.

The procedure is repeated at approximately 24 hours after the test dose is received. The test is completed by measuring a 1000 cc. aliquot of 24-hour urine specimen collected from the patient during the interval between the I^{131} dose and the 24-hour uptake determination.

A report of the six-hour uptake, the 24-hour up-

take, and the total urinary excretion is returned to the physician.

Material

The material which was used for this investigation consisted of 535 cases on whom I^{131} uptake studies had been performed by the 24-hour method as de-

The six-hour test in our laboratory is equal to the 24-hour test in its ability to distinguish euthyroid patients. There is likewise equally good correlation in the groups of diffuse toxic goiter and nodular non-toxic goiter.

Cases of nodular toxic goiter, hypothyroidism, thyroiditis, and carcinoma do not lend themselves well to diagnosis by uptake studies.

If the saving of time in the laboratory and convenience to the patient are considered, the six-hour I^{131} uptake study is superior to the 24-hour test, as a measure of thyroid function.

scribed above. These cases were seen at the Wesley Medical Center Isotope Laboratory in the 21 months between April 1, 1961, and January 1, 1963.

The clinical diagnosis on the patients who were hospitalized was obtained from the hospital record after discharge. The clinical diagnosis on the patients who were seen as outpatients was obtained from questionnaires sent to, and returned by, their physicians.

Of the 535 cases on whom uptake studies were made we were able to get valid final clinical diagnosis on 336. One hundred and eighty-nine were eliminated for one of the following reasons: inconclusive final clinical diagnosis, no reply to questionnaire, incomplete testing, or THS stimulation. In addition, ten cases were discarded in which the results were obviously in error due to recent ingestion of thyroid depressants.

The remaining 336 cases comprises the series used

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COMPARISON OF THE 6 HOUR AND 24 HOUR I^{131} UPTAKE STUDIES IN VARIOUS THYROID CONDITIONS

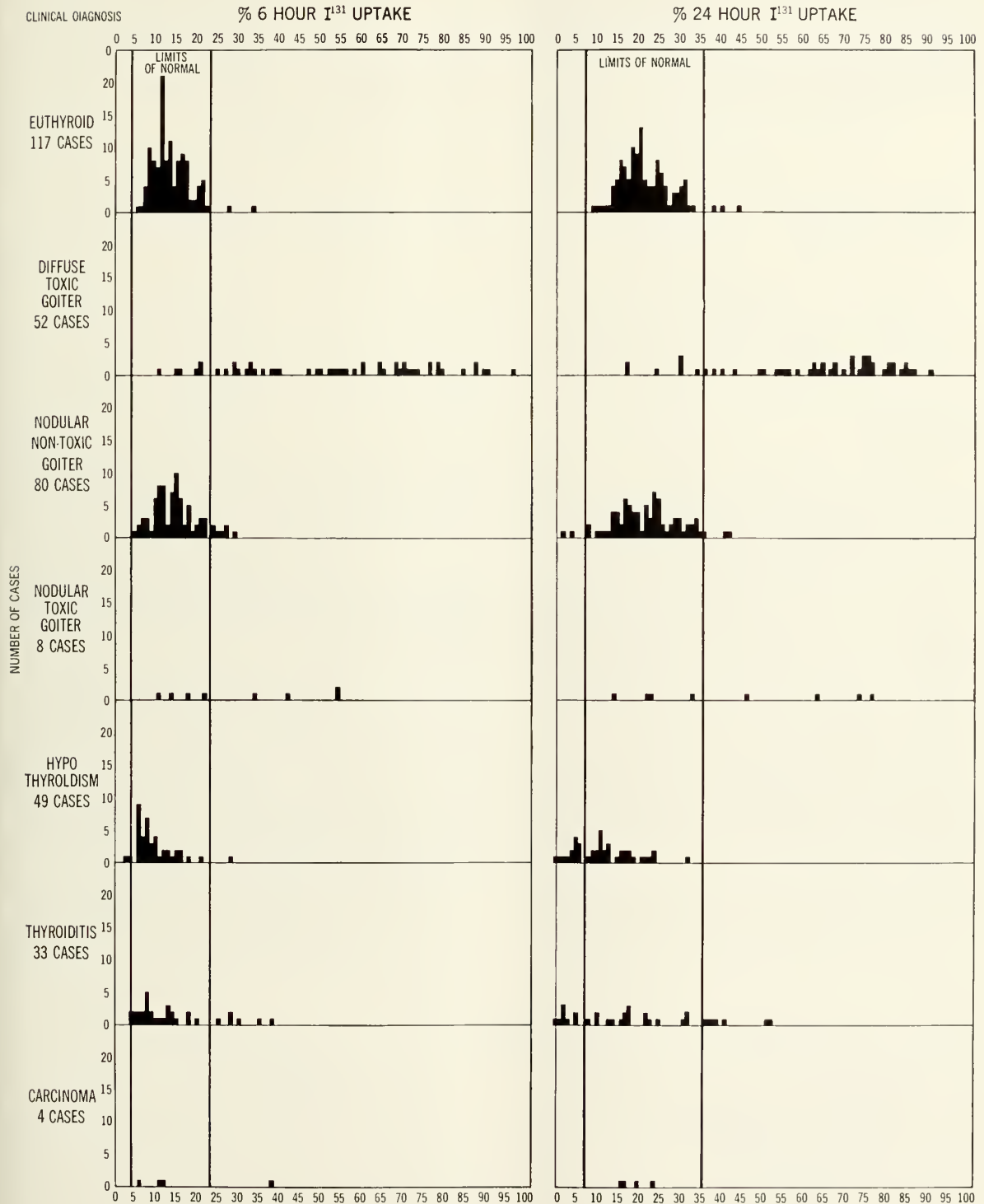


Figure 1

in this study. They were separated into clinical categories according to the doctors' diagnosis. The distribution of the cases in each clinical group based on uptake at six hours and at 24 hours was then plotted in bar graph form. The results are shown in *Figure 1*.

The mean, the standard deviation, and the limits of normal (± 2 standard deviations) for the euthyroid uptakes at six hours and 24 hours were then calculated with the following results.

	6-hour Test	24-hour Test
Mean	14	21.5
1 Standard Deviation	4.5	6.75
2 Standard Deviations	9	13.5
Limits of Normal	5 to 23	8 to 35

Using these limits of normal to separate the euthyroid, hyperthyroid, and hypothyroid cases, the actual number in each category based on "laboratory diagnosis" were summed up with the results shown in *Figure 2*.

Discussion

From the results tabulated in *Figure 2* it can be seen that the laboratory diagnosis corresponded to the clinical diagnosis of euthyroidism in all but two of the six-hour tests, and in all but three of the 24-hour tests. All had normal PBI's.

In none did the history or physical examination suggest that any of the known causes of increased iodine uptake as discussed by Grayson⁶ such as iodine deficiency, chronic liver disease with dietary deficiency, rebound phenomenon following withdrawal of antithyroid drugs, nephrosis, or certain foods, were present.

These cases may, therefore, represent "normals" which might be expected to fall outside the "limits of normal" as determined by ± 2 standard deviations from the mean.

The discrepancies between the clinical diagnosis and the laboratory diagnosis in the euthyroid cases

No. Cases	Clinical Diagnosis	Laboratory Diagnosis	
		6 HR. UPTAKE	24-HR. UPTAKE
117	Euthyroid	Eu 115	114
		Hyper 2	3
		Hypo 0	0
52	Diffuse Toxic Goiter	Eu 6	7
		Hyper 46	45
		Hypo 0	0
80	Nodular Non-Toxic Goiter	Eu 73	75
		Hyper 7	3
		Hypo 0	2
8	Nodular Toxic Goiter	Eu 4	4
		Hyper 4	4
		Hypo 0	0
42	Hypothyroidism	Eu 39	29
		Hyper 1	0
		Hypo 2	13
33	Thyroiditis	Eu 25	18
		Hyper 6	7
		Hypo 2	8
4	Carcinoma	Eu 3	4
		Hyper 1	0
		Hypo 0	0

Figure 2. Clinical versus laboratory diagnosis in various types of thyroid disease.

is 1.71 per cent in the six-hour test and 2.56 per cent in the 24-hour test, or less than 2 per cent difference between the 6- and 24-hour tests in the clinically euthyroid category.

Similarly, there is less than 2 per cent difference between the 6- and 24-hour tests in the diffuse toxic goiters, the nodular toxic goiters, and the nodular non-toxic goiters as shown in *Figure 3*. The six-hour and 24-hour tests were equally bad in nodular toxic goiter, a fact which has previously been observed.¹

It is generally accepted that the uptake studies of any type are unsatisfactory in hypothyroidism.^{7, 8} This is demonstrated again by our results.

In thyroiditis the uptake of ¹³¹I depends on the

No. Cases	Clinical Diagnosis	6-hour			24-hour		
		Agree	Disagree	Per Cent Disagree-ment	Agree	Disagree	Per Cent Disagree-ment
117	Euthyroid	115	2	1.71	114	3	2.56
52	Diffuse Toxic Goiter	46	6	1.15	45	7	1.35
80	Nodular Non-Toxic Goiter	73	7	0.87	75	5	0.63
8	Nodular Toxic Goiter	4	4	50.0	4	4	50.0
42	Hypothyroidism	2	40	95.7	13	29	69.1

Figure 3. Percentage difference between the 6-hour and the 24 hour uptake in thyroid disease.

stage of disease, usually being increased early and decreased later in the course of the illness.^{9, 10}

The functional capabilities of the malignant cell with regard to iodine metabolism determines the uptake of I^{131} in cases of carcinoma.¹¹

As might be expected, our results reflect the fact that uptake studies of any type are not as useful in the diagnosis of thyroiditis and carcinoma as they are in the diagnosis of the euthyroid and certain types of goiter.

Acknowledgment

The authors wish to thank Miss Selma Licklider and Mrs. Mary Camacho for their technical assistance.

References

1. Miller, E. R., Dailey, M. D., Holmes, A. V., and Shekine, G. E.: Studies with Radioiodine. 1. Function and Rate of I^{131} Uptake of Thyroid, *Radiology* 57:37-47 (July) 1951.
2. McConahey, W. M., Owen, C. A., Jr., and Keating, F. R.: A Clinical Appraisal of Radioiodine Test of Thyroid Function, *J. Clin. Endocrinol. & Metabol.* 16:724-734 (June) 1956.
3. Beierwaltes, W. H.: The Value of Radioactive Iodine Uptake and PBI Estimations in the Diagnosis of Thyrotoxicosis, *Ann. Int. Med.* 44:40-51 (Jan.) 1956.
4. Fisher, D. A., Oddie, T. H., and Burroughs, J. C.: Thyroidal Radioiodine Uptake Rates in Infants, *Am. J. Dis. of Child.* 103:738-749 (June) 1962.
5. Thoma, G. E.: The Internist's Viewpoint on the Use of Radioactive Iodine in Thyroid Disorders and Cardiac Abnormalities. I. Diagnostic Procedures for Estimation of Thyroid Function, *Southern Med. J.* 53:405-411 (April) 1960.
6. Grayson, R. R.: Factors Which Influence the Radioactive Iodine Thyroidal Uptake Tests, *Am. J. Med.* 28:397-415 (March) 1960.
7. Rollman, H., Petit, W. M., and Starr, P.: Serial Observations of I^{131} Levels in the Plasma as an Aid in the Diagnosis for Hypothyroidism, *J. Lab. & Clin. Med.* 39:697-703 (May) 1952.
8. Carr, E. A., Beierwaltes, W. H., Neel, J. V., Davidson, R., Lowrey, A. B., Dodson, V. N., and Tanton, J. H.: The Various Types of Thyroid Malfunction in Cretinism and Their Relative Frequency, *Ped.* 28:1-16 (July) 1961.
9. Bell, G. O.: Hashimoto's Thyroiditis (Struma Lymphomatosa), *Surg. Clin. N. Am.* 42:647-653 (June) 1962.
10. Eastcott, H. G., and Doniach, D.: Autoimmune Thyroiditis with Raised I^{131} Uptake, *Proceedings Royal Soc. of Med.* 56:285-290 (April) 1963.
11. Bartels, E. C., Bell, G. O., and Geokas, M. C.: Evaluation of the Thyroid Nodule, *The Surg. Clin. N. Am.* 42:655-665 (June) 1962.

SYSTEMIC LUPUS ERYTHEMATOSUS

Systemic lupus erythematosus, a disease characterized by skin lesions, fever, weight loss and pain and inflammation in the joints, may be on the increase in the U. S. "The disease is said to be as common now as ulcerative colitis or acute rheumatic fever . . ." according to *Patterns of Disease*, a Parke, Davis

& Company monthly publication for the medical profession.

Records of a 3,500 bed general hospital showed no cases in 1928, four in 1938, nine in 1948, and 36 in 1958, according to *Patterns*. Two possible explanations of the increase are cited by *Patterns*: improved diagnostic techniques, and the cure, by use of antibiotics, of secondary infections in many patients who previously would have died of these infections before systemic lupus erythematosus was diagnosed.

Systemic lupus erythematosus is one of several conditions described by *Patterns* in a special report on diseases in which a person acquires a specific sensitivity to his own tissues—autoimmune diseases. "The autoimmune process," according to *Patterns*, is "a new concept of the cause of disease."

Five other causes of disease had been recognized before autoimmunity. The first, invisible living creatures (microbial agents), was guessed at by ancient physicians. Then inanimate physicochemical influences were recognized. Dietary deficiencies, genetic faults, and specific intolerance to chemicals in the external environment were later recognized in that order.

The risk of autoimmune diseases is usually greater for women. About 90 per cent of patients with systemic lupus erythematosus are women, and 90-95 per cent of those with Hashimoto's thyroiditis, a disease of the thyroid gland, are women. In only one of six diseases cited by *Patterns* are men in the majority. About 60 per cent of patients with periarthritis nodosa, a disease involving the arteries, are men.

Relatives of persons with systemic lupus erythematosus also face a greater risk of autoimmune diseases, according to *Patterns of Disease*, a Parke, Davis & Company publication for physicians. Certain serologic abnormalities associated with these diseases appeared more frequently among relatives of systemic lupus erythematosus patients than among relatives of other patients.

A chronic false-positive result of the Wassermann test for syphilis may indicate an abnormality of the immune apparatus before tissue damage results, according to *Patterns*.

Psychologic factors may play a role in rheumatoid arthritis, one of the autoimmune diseases, according to *Patterns*. "When asked what they would like to change in themselves and in their lives, patients with rheumatoid arthritis wanted fewer changes than non-hospitalized males or hospitalized males with duodenal ulcer. They also were less likely to remember having been angry within the past year or to remember when last they had been angry," according to *Patterns*.

Hearing Loss . . .

. . . Due to Otosclerosis: Diagnosis and Treatment

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IN THE PAST a person with progressive hearing loss has had two choices: he may have obtained a hearing aid, or he may have become quite an efficient lip-reader. In addition, by habitual deception this person may appear to understand the speaker whereas actually much of the conversation is not heard.

Progressive hearing loss is characteristic of otosclerosis. Because surgery for otosclerosis has attained a high degree of success, many people with this impairment may be helped.

This progressive hearing loss starts during the second or third decade of life and is simply a mechanical problem. The otosclerotic bone or focus originates from the edge of the oval window and represents an attempt to repair a tiny congenital defect in this region. This abnormal bone grows into the footplate of the stapes causing its fixation by varying degrees. This, of course, mechanically blocks the sound as it attempts to enter the inner ear through the stapes. The surgical problem is clear.

Since this hearing loss is very gradual and otherwise asymptomatic, the patient will first notice that he misses words if the speaker is at some distance. He will state, "I cannot hear the speaker in a meeting or if someone talks with a soft voice in a quiet room." He may relate, "If the surroundings are noisy requiring people to speak up, I hear better than my friends." Commonly this patient may complain that he cannot hear television or family members while chewing noisy foods like potato chips. In these individuals bone-conduction is better than air-conducted sound, and noises from chewing heard by bone-conduction unduly interfere with the air-conducted conversation. Otosclerosis is familial and frequently half of the family members may have this type of hearing loss. As the hearing loss progresses many people purchase hearing aids to obtain the necessary amplification to carry on in business or social situations. Many have successfully worn a bone-conduction type of hearing aid in the past.

In contrast to the people with otosclerosis, the individuals with sensori-neural hearing loss complain, "I can hear your voice but I cannot understand." They state, "When it is noisy or if more than one person is talking, I hardly get a word." Because a mixture of hearing losses may occur in one person, some of these people may have otosclerosis in addi-

tion to the sensori-neural loss. Some of these people, therefore, may be helped by stapes surgery. The diagnosis of these losses is made by tuning fork and audiometric tests.

Diagnosis of otosclerosis may be made by tuning forks tests. A high percentage of success now results from surgical techniques for this hearing impairment.

Physical Examination

The physical examination is usually normal. The tympanic membrane appears healthy but the tuning fork tests are abnormal. Firstly, a 1024 cycle per second tuning fork placed on the forehead will lateralize to be best heard in the poorer ear. Secondly, the fork will be heard better on the mastoid by bone than by air (Rinne negative). This finding is virtually a pathognomonic sign of significant conductive hearing loss. The audiometric tests in the soundproof room shows the exact extent of the hearing loss and the exact chance for surgical success. At this time current surgical techniques yield approximately 90 per cent chance for restoration of hearing to the "nerve" or bone-conduction level. This usually means a practical hearing level for the patient.

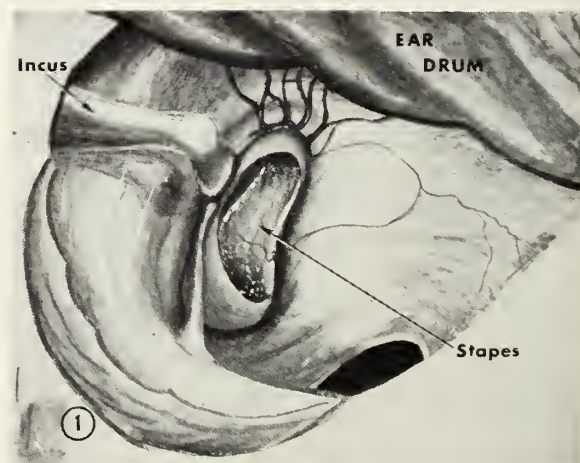


Figure 1. Surgeon's view of the stapes after elevating and turning the drum forward.

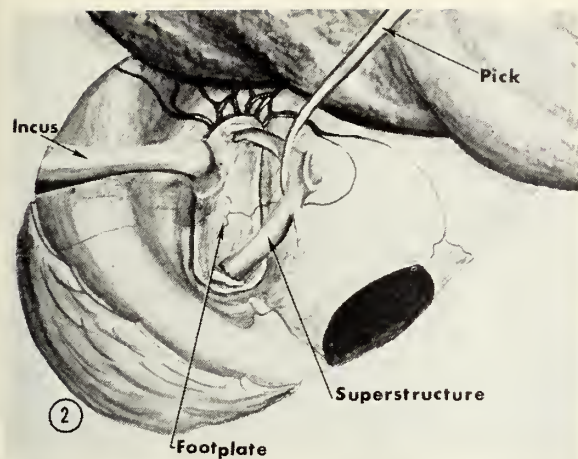


Figure 2. The superstructure of the stapes is removed leaving the footplate in place.

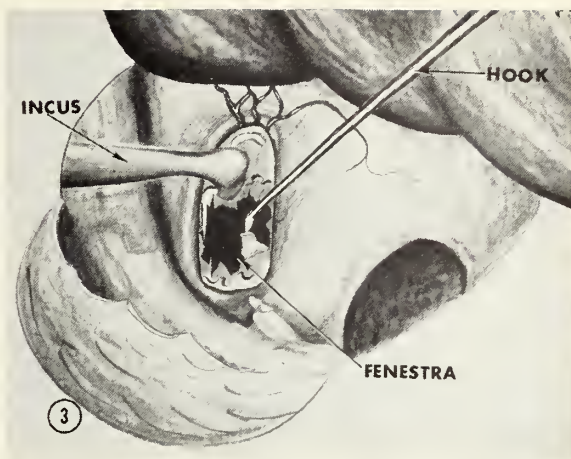


Figure 3. A fenestra is made into the inner ear by removing part of the footplate.

Surgical Procedure

Once the diagnosis is made, the first surgical step is to turn back the drum to expose the region of the stapes (Figure 1). The second step is to remove the superstructure of the stapes so that the fixed footplate remains in place (Figure 2). The footplate is partially removed by the use of small picks and hooks (Figure 3). Since the fluid of the inner ear is exposed it is important that antibiotics are used during the postoperative period to eliminate possible labyrinthitis.¹ At times it is necessary to use a drill on a footplate greatly thickened by otosclerotic bone. Although many types of prosthetics are used to replace the stapes either wire or tubing is most common. After positioning Gelfoam over the footplate a Teflon

tube may be placed between the incus and the Gelfoam (Figure 4).² On the other hand, a stainless steel wire may be placed between the incus and Gelfoam³ (Figure 5) or a vein graft⁴ may be used with the wire in place of the Gelfoam.

References

1. Tabor, James R.: Use of Antibiotics in Stapedectomy: Histopathological Results. 71:255-269, 1962.
2. Hildyard, Victor H.: Tetrafluoroethylene Prosthesis in Stapes Surgery, A.M.A. Arch. Otolaryng. 74:682-689, 1962.
3. House, Howard P.: The Prefabricated Wire Loop-Gelfoam Stapedectomy, A.M.A. Arch. Otolaryng. 72:298-302, 1962.
4. Kos, C. M.: Vein Plug Stapedioplasty for Hearing Impairment Due to Otosclerosis, Annals of Otol., Rhin. and Laryng. 69:597-609, 1960.

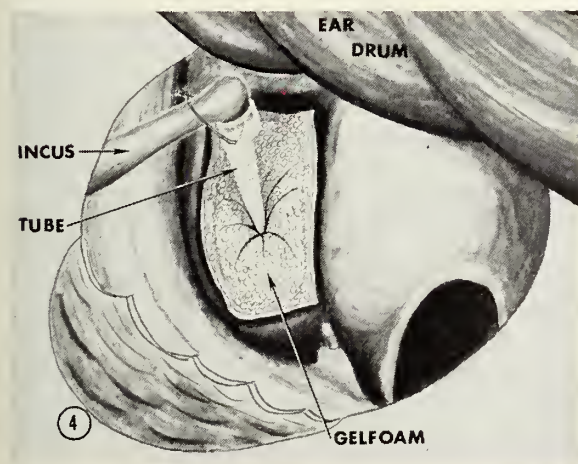


Figure 4. Gelfoam is placed over the fenestra in the footplate and tubing is positioned between the Gelfoam and the incus.

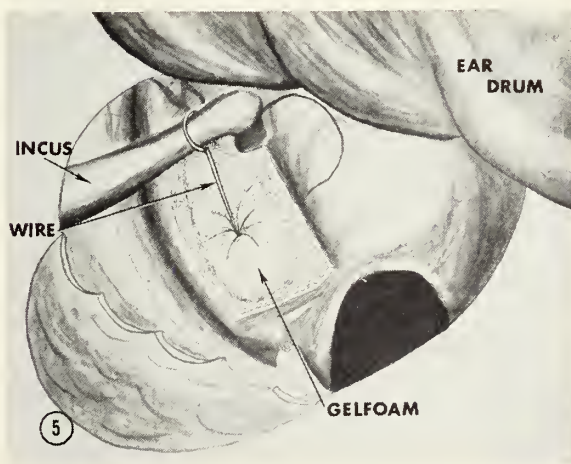
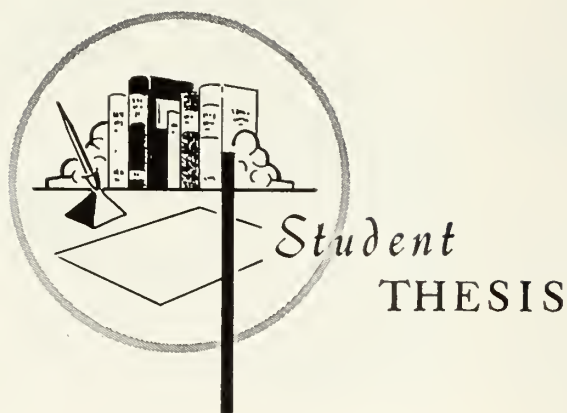


Figure 5. Gelfoam or vein placed in the fenestra is attached to the incus with a wire.



Malignant Melanoma of Skin and Mucous Membranes: Review of the Literature and Experience at the University of Kansas Medical Center 1946 to 1961

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Introduction

MALIGNANT MELANOMA is a relatively uncommon neoplasm, and at the same time one of the most unpredictable clinically. By the nature of its early clinical features and because of its low incidence, it has provided considerable opportunity for mismanagement. During the past two decades clinical, histopathological, and basic biological areas of knowledge surrounding this entity have advanced and been clarified to a great extent. It is not, of course, possible to enunciate a precise formula for *the* cure, but clinical experience indicates a rational approach which shows a significant five-year survival rate. It is, therefore, the purpose of this paper to review the basic areas of knowledge essential to understanding the neoplasm. As a part of this work, the experience at the University of Kansas Medical Center from 1946 to 1961 is included.

Incidence

The absolute incidence of any neoplasm is difficult to ascertain. Allen and Spitz state that the incidence of primary melanoma of skin and mucous membranes is 0.0018 per cent; or approximately two of

every 100,000 population. The figures of Macdonald roughly agree, being 1.2 per racial group per year.

By way of comparison with more commonly seen entities, carcinoma of the lung (primary) constituted 856 admissions to the University of Kansas Medical Center from 1947 to 1960. Melanoma cases during the same period totaled about 125 admissions.

Incidence According to Age Distribution

Primary melanoma is very rare before puberty. Allen and Spitz feel that the incidence is probably less than 0.3 per cent of all primary melanomas of skin and mucous membranes. In the past 15 years no cases of pre-puberal melanoma have been recorded at the Kansas University Medical Center. An entity easily confused with pre-puberal melanoma is the juvenile melanoma. A discussion of this subject is beyond the scope of this paper. The interested reader is referred to the work of Allen and Spitz cited above.

Figure 1 demonstrates the incidence according to age at diagnosis and sex, at the University of Kansas Medical Center from 1946 to 1961. The average age of females with melanoma of skin and mucous membranes in this series was 50.4 years; of males, 53.2 years. The determinate group totaled 71 females and 64 males.

Figure 1 clearly shows the sharp increase in incidence in the fourth decade of life, and the relatively constant rates of onset thereafter.

The figures of Allen and Spitz for age of clinical

This is one of a group of theses written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. Dr. Robert T. Cook is now serving residency at the University of Kansas Medical Center, Kansas City.

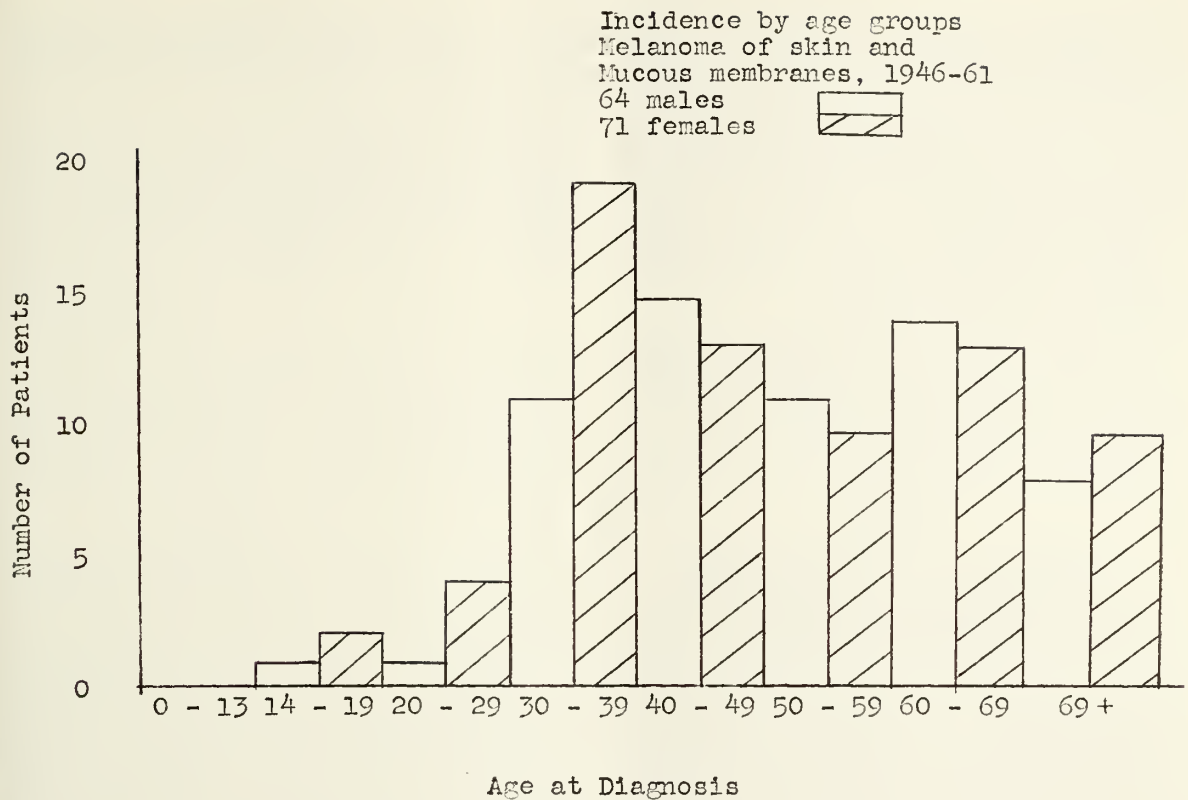


Figure 1

presentation were: female average, 47.7 ± 15.7 ; male average, 47.1 ± 14.9 . These figures show relatively little difference from the present series.

Incidence According to Sex

Although no consistent statistically demonstrable sex differential is generally acknowledged in the literature, Booher and Pack report a sex ratio of 40 per cent male and 60 per cent female in their series of melanoma of the hands and feet. It is interesting, therefore, to note in the present determinate group that 64 (47 per cent) were males and 71 (53 per cent) were females.

Incidence According to Race and Complexion

The relative ratio of melanoma between caucasoid and negroid peoples is by no means certain. In the present series of 135 patients, all were caucasoid.

After correcting for relative hospital populations with respect to race, Allen and Allen and Spitz report a ratio of around four white to one colored. Macdonald reports equal incidences among three racial groups. Her series is open to criticism because of the size and method of gathering data, but a further investigation is certainly warranted.

Pack states that 11 per cent of the American white population is blonde with fair skin and blue eyes,

or red or sandy haired with freckled skin and hazel-blue eyes. Furthermore, he feels that 60 to 70 per cent of people with malignant melanoma have this type of skin and hair.

Incidence According to Anatomical Distribution

In separate surveys, Pack determined the anatomical distribution of the common mole in healthy patients and of malignant melanoma in his series. He gave the following results:

TABLE 1 (from Pack)		
	Moles Per Cent	Melanomas Per Cent
Head and Neck	13.2	28.9
Upper Extremity	30.2	10.9
Lower Extremity	17.2	29.6
Foot	0.2	14.5
Trunk	39.3	23.6
Genitals	0.1	2.8

As the above table clearly illustrates, the relative frequency of melanoma in relation to frequency of

benign moles in the same area varies tremendously from region to region. The surface area of the feet, for example, is quite small, and yet 14.5 per cent of melanomas were primary there in Pack's series. This fact is more striking when it is seen that far less than one per cent of benign moles occur at this site. Reference to the table shows that the genitals provide a similar area of disparity.

Most literature shows a relatively high incidence of melanoma of the feet. Macdonald reports 15 or a total of 47 as occurring on the feet.

Accordingly, the 3.6 per cent incidence in the present series (Table 2) is somewhat unexpected. However, when the subungual melanomas of the foot are included, the figure is 5 per cent.

TABLE 2

DISTRIBUTION OF PRIMARY LESIONS OF
SKIN AND MUCOUS MEMBRANES,
1946 TO 1961, TOTAL—137.
KANSAS UNIVERSITY MEDICAL CENTER

Location—skin of	Total	Per Cent Total
Head and Neck	39	28.5
Upper Extremity	19	13.9
Lower Extremity	18	13.1
Foot	5	3.6
Trunk	26	19.0
Vulva	1	0.7
<i>Mucous Membranes and Other</i>		
Conjunctiva	4	2.9
Ciliary Body	1	0.7
Subungual		
Hand	1	0.7
Foot	2	1.5
Meninges	2	1.5
Posterior Tibial Nerve ...	1	0.7
Undetermined	18	13.1

The unfortunately high number of melanomas of undetermined origin in this series would change the ratios in an unpredictable manner, and the actual correspondence to other series in regard to anatomic distribution is uncertain, but appears roughly similar.

Clinical Features and Natural History

The common nevus or mole is ubiquitous and rarely given a second look. Pack found that the average white adult had 15 to 20 pigmented nevi. Clinically, one sees a spectrum of pigmented areas ranging from the small, flat freckle, through nevi which are of similar size and likewise flat, to large (up to 2 cm. or more), deeply pigmented, flat or elevated nevi which may be virtually pedunculated. Another clini-

cal variant which is occasionally seen is the "blue" nevus, or dermal nevus of Jadassohn-Tieche. This type owes its appearance primarily to situation deep in the dermis.

The three basic types of nevus are intradermal, junctional, and compound. The first is by far the most common and is probably always benign, for reasons to be discussed later. Clinically, the intradermal nevus is often raised, although it may be flat. One or more hairs frequently grow from its substance. Pigmentation varies from none (uncommonly) to quite dark. Histologically, the nevus cells of the intradermal nevus lie entirely within the dermis.

The junctional nevus is, by and large, clinically indistinguishable from the intradermal, although it has a greater propensity to be flat and hairless. The histologic *sine qua non* of this variety is nests of nevus cells at the dermo-epidermal junction.

The compound nevus represents merely a combination of the two preceding structural types, and is not uncommon.

Although clinical differentiation of these types is not possible with any certainty, nevi occurring in certain areas should always be regarded as junctional and therefore capable of malignant change, as will be discussed later. These areas are the palms of the hands, soles of the feet, and genitalia. As shown earlier, these regions display a disproportionately high incidence of melanoma.

Signs and Symptoms

In Pack's series 60 to 75 per cent of patients with primary melanoma of the skin had noticed pre-existing nevi. In the present series the statistic is not available, but certainly it was unusual to encounter a patient unaware of an earlier nevus. Booher and Pack, however, state that of 29 patients with melanoma of the hands and 122 with melanoma of the feet, only approximately 25 per cent were aware of pre-existing nevi.

The early symptoms and signs may be legion. Itching, bleeding, "oozing," peripheral erythema, induration, increase in size, increase in elevation, infection, ulceration or development of subcutaneous nodules in the immediate area, are all grave developments, any one of which calls for immediate excisional biopsy. Increasing pigmentation should also cause suspicion, although there are two clinically common conditions which cause generalized darkening of nevi, i.e., onset of puberty and pregnancy.

A representative case to illustrate certain aspects of the clinical course is as follows: KUMC case no. 55-5375. A 70-year-old retired white male first noticed, ten months prior to admission, that a "mole" on the lateral aspect of the calf of the left leg began to grow. Six months prior to admission he noticed

the appearance of a left inguinal nodule. On physical examination the patient presented a 3 cm., darkly pigmented, foul-smelling, friable and cauliflower-like mass which bled easily on the lateral aspect of the left calf. Left inguinal adenopathy was present. In spite of left groin dissection and local excision of the primary site with skin grafting, the patient presented seven months later with cutaneous recurrences on the left leg. He died two months later of widespread metastases.

Histopathology

Nevi are congenital, although they often become more prominent at puberty, with more resultant attention after that age. The three primary anatomical variants of the nevus are: junctional, compound, and intradermal.

Junctional Nevus

The junctional nevus is defined as one with nevus cells at the dermo-epidermal margin, within the epidermis itself. These cells are generally found clustered in nests, distorting to lesser or greater extent the normal architecture of the basal layer. The nevus cells stain rather darkly, are relatively spindle-shaped in quiescent lesions, to plump and rounded in more active lesions. There is often noted in these nests a loss of cohesiveness of the nevus cells, as compared with surrounding epithelial cells. Inter-cellular bridges are largely lacking, and the nevus cells contain scattered melanin granules. The pigmentation varies from none or very little to quite dense, obliterating cellular detail. Mitoses are seldom, if ever, present in the benign lesions.

Intradermal Nevus

This type is the common adult "mole." The nevus cells lie entirely within the dermis and, almost without exception, appear quite inactive with spindle-shaped or rounded and hyperchromatic nuclei. Groups of the cells may be packed closely together, but a drifting away appearance may be present at the edges, with single cells or small groups being isolated from the main body. This does not indicate any particular lack of cohesiveness in the sense of autonomous growth.

Compound Nevus

This term is applied to those structures with both dermal and junctional elements, as described in the two foregoing sections.

Lentigo and Ephelis (Freckle)

Small, dark brown marks are commonly seen to appear and remain on all parts of the body in child-

hood. Similar pigmented areas may occur in old age about the forearms and dorsae of the hands. These benign, small (several millimeters) lentigines are characterized histologically by elongation of the rete pegs of the epidermis and an increased number of melanocytes. Hyperpigmentation of the basal cell layer in the elongated rete pegs is present.

Ephelides (freckles) are to be distinguished from lentigo by at least two histologic features. There is no elongation of the rete pegs and there is a decrease, rather than increase, in the number of melanocytes. This latter point emphasizes the fact that varying degrees of pigmentation are primarily differences in physiology rather than anatomy.

Occasional junctional nevi are seen to have areas of lentigo at the periphery. No unequivocal agreement exists, however, as to whether lentigo can normally progress to junctional forms.

Malignant Melanoma

The junctional nevus or the junctional component of a compound nevus—not the intradermal nevus—is considered to give rise to melanoma. Evidence for this is histologic, and consists of finding junctional change in some portion of the primary lesion, depending upon the diligence of the investigator. Occasional lesions which are severely ulcerated may frustrate the search for junctional changes, but it is felt a constant enough finding to warrant the view that very few, if any, melanomas arise from intra-dermal nevi.

Histologically two main variants present: superficial melanoma, and deep or invasive melanoma. Superficial melanoma histologically shows moderate lack of cohesiveness of nevus cells with loss of inter-cellular bridges. Individual cells may be spindle-shaped to rounded or polyhedral, with nucleoli which may be quite large and acidophilic. The picture is sometimes quite confusing with bizarre or atypical cells. Pigmentation may be intense or entirely lacking without any reliable prognostic significance in either case. Superficial melanoma lacks a great degree of dermal invasion. There may, however, be epidermal invasion, or extension along epidermal planes. Quite often, isolated, pigmented cells are seen surrounded by a halo of clear cytoplasm in various layers of the epidermis extending away from the central cell mass. The significance of these cells is not clear. Allen believes these to be the source of melanoma, and to be derived from epidermis itself.

Pleomorphism may be slight to marked; mitoses are not usually numerous and may be rare. The presence of mitotic figures is not an absolute criterion of malignancy and their absence does not exclude the diagnosis. When present, however, they should always excite suspicion.

A feature often found at the site of a primary melanoma is pseudoepitheliomatous hyperplasia. Large strands of epithelium dip deeply adjacent to the tumor, sometimes isolating an epithelial peg in the tumor mass. Functional change may at times be found along the border of such an hyperplastic area, giving an appearance sometimes interpreted as transition zones of malignant change.

In the deep melanoma the above picture is present to greater or lesser extent, somewhat depending upon presence or absence of extensive ulceration or infection which sometimes intervenes to obliterate landmarks. In addition, significant downward extension of the tumor has occurred. Deep invasion of the dermis and its structures antedates involvement of subcutaneous fat and muscle. Little imagination is required to envision the rapidity of metastasis once the vascular and contractile muscle layer is reached.

Experimental Biology and the Pathogenesis of Melanoma

A considerable amount of experimental work on melanoma and pigment cell biology, particularly in lower animals, has been done, but the great majority of work has not yet produced direct therapeutic implications. Although it may eventually be found unnecessary, it would seem important at present to pursue the most basic knowledges concerning melanoma as a biologic system.

The Origin of Mammalian Pigment Cells

At least two fundamentally different views obtain concerning the stem cell of malignant melanoma in the human. The first to be examined here is, simply, that the melanocytes of the skin derive from neurectoderm which migrated in embryonic life. The classic work of Rawles showed—"A mediolateral spread in the pigment-forming capacity of the various portions isolated (transplants of neural tube and adjacent tissues of mice to celomic cavities of chick embryos) was observed, first, at the anterior levels and gradually later at more posterior levels as the embryo continued to differentiate along its anteroposterior axis." "The data demonstrate clearly that only those tissues containing presumptive neural crest, histologically recognizable neural crest, or cells migrating from the neural crest can produce melanophores."

Presumptive data for the same mechanism in the human has been provided by Zimmermann and Becker. They studied histologically 54 Negro fetuses ranging from seven weeks menstruation age to birth. They observed the earliest pigmentary precursors in the fetal dermis at the tenth week. These appeared first in the head region. By the end of the first half of fetal life the melanoblasts were found in all areas,

with precursors of dendritic melanocytes beginning to differentiate.

Pinkus, Staricco, Kropp, and Fan present additional indirect evidence for the separateness of the melanocyte line and Malpighian (basal) cell line. (1) "Melanocytes are little affected during a period of forced epidermal proliferation induced by stripping of the keratin layer." (2) "Melanocytes respond by increased activity, not by increase in number, to the stimulus of thorrium X, which induces hyperpigmentation and epidermal proliferation." These authors feel that, "There is no evidence for genealogic relationship between human melanocytes and epidermis. Under experimental conditions, melanocytes do not act either as precursors of Malpighian cells or as modified Malpighian cells. . . . The structural and functional entity 'epidermis' may be considered as a symbiosis of at least two biologically independent components: Malpighian cells and melanocytes."

After studying the "Melanocyte System of Human Epidermis," Szabo stated that every Malpighian cell communicates with several melanocytes. Others have commented on the dendritic communications of melanocytes with basal cells, and Zimmerman and Becker feel that a major recent advance in this field is the recognition that the epidermal basal cells receive pigment granules secondarily.

At this point it would be well to emphasize that differences in pigmentation are found to be primarily physiologic rather than anatomical. For example, there are no significant differences in the number of melanocytes found in the white and Negro skin. Furthermore, Szabo's studies indicate that the hyperpigmentation of irradiated skin results from hyperactivity of a few enlarged melanocytes, the majority having been destroyed by the irradiation.

The summation of this view of the origin of pigment cells and their relation to malignant melanoma is provided by Gordon who states that, ". . . it now appears that the terminal stage in morphogenesis of pigment cells in the lower vertebrates, fishes, amphibians, and reptiles is the melanophore which becomes the pigment-effector cell . . . while in birds and mammals, pigment cells do not develop beyond the melanocyte stage. . . ." Gordon feels that if these hypotheses concerning the origin (neurectoderm), migration and development of pigment cells are correct, then melanoma may be viewed as a ". . . manifestation of an inherited metabolic error which inhibits the normal development of the pigment cell."

An opposing view is held by Allen who acknowledges the work of Rawles and states that neural control of many varieties of pigmentation is apparent. "However, to conclude from this that the cells of the neural crest are incorporated in the epidermis as melanoblasts is to fail, in effect, to distinguish the

artist from his pigments." He feels that histologic evidence indicates that basal cells and some prickly cells become converted to melanoblasts from which junctional nevi are derived.

Allen further subscribes to the epidermal theory for the cells of the intradermal nevus; that is, that these cells are derived from epidermal basal cells which drop off into the dermis. It is well known that some change regarding the position of nevi takes place during puberty. For example, Allen gives the figure 98 per cent for associated junctional change in juvenile nevi, whereas only 12 per cent of adult nevi display a corresponding change. This datum implies some downward migration of junctional cells at puberty; or, alternately, dissolution of junctional cells at puberty.

Whether either of these views is strictly correct remains to be seen, but definitive work regarding genealogy of melanoma cells must be based upon experimental grounds, possibly utilizing a system of "tagging" embryologic tissues for later identification.

Experimental Considerations

Bio-chemical experimentation with malignant melanoma has addressed itself quite often to the metabolism of melanin and its precursors. This preoccupation has probably resulted largely from the tangible and easy *dopa* reaction for diagnosis of tissue at least potentially capable of producing melanin. Dihydroxyphenylalanine (*dopa*) reacts with tyrosinase, of which there are at least three mammalian varieties, to produce a black pigment. The reaction may be positive in amelanotic melanomas and active junctional nevi, as well as pigmented melanomas. The reaction is, therefore, specific for tyrosinase and characteristic of melanin producing tissues; but, it is not of itself diagnostic of melanoma. Nevertheless, pathways implicitly leading through tyrosinase catalysis to melanin production have been utilized under experimental conditions in attempts to control melanoma cell growth.

Riley, for example, outlines several normal pathways of tyrosine metabolism including biosynthesis of thyroxine and adrenalin. In attempting to affect melanoma metabolism, however, he chooses the tyrosine metabolism progressing to melanin synthesis. Riley states that, "significant inhibition of mouse melanoma has been obtained with ortho-, meta-, and paraphenylenediamine, which have also been shown to react with *dopa* or other melanoma components in manometric and spectrophotometric experiments."

Thus, in an experimental situation, chemotherapy has been attempted on the basis of specialized function—that is, melanin production. However, as was mentioned earlier, neither the presence of tyrosinase nor the synthesis of melanin is peculiar to the mel-

anoma cell. If inhibition of a melanoma system is obtained it would seem quite possible that the result is fortuitous, depending upon rate of melanin synthesis by the particular tumor, thus affecting uptake of the chemotherapeutic compound. Once incorporated, the compound might well affect the "normal" or undefined pathways of tyrosine metabolism which are more basic and present in both neoplastic and non-neoplastic tyrosinase-containing cells.

This argument leads logically to the position that melanin production by the melanoma is entirely an effect, not a cause; and significant biochemical differences between melanoma cells and benign melanin-producing cells should be looked for outside their pigment pathways. In support of this thesis is the microspectrophotometric-autoradiographic work of Speece, *et. al.*, who measured tyrosinase activity in human melanomas. On the basis of semiquantitative data they concluded that melanin production is probably not related to biologic activity of the tumors.

An investigative approach which would perhaps be fruitful is characterized by metabolic balance studies of tissue cultures. Differential comparisons of amino acid requirements of normal and malignant tissues might provide information regarding basic features of malignancy. Again, careful analysis of glycolytic patterns could conceivably provide an entry point for rational therapy.

Results of Treatment

Methods: The treatment of malignant melanoma is at present primarily surgical. In the past, fulguration has occasionally been used for the treatment of suspicious nevi. This practice cannot be condemned too strongly. It has had a high rate of local recurrence and ultimate distant metastasis attendant upon it. Furthermore, it robs the physician of the first step in rational therapy—adequate diagnosis.

Primary surgical treatment has in the last few decades been excision, with regional node dissection done on occasion where clinical involvement was present. More recently Pack has emphasized the value of the following approach: (1) excisional biopsy; (2) three dimensional local excision, "widely and ruthlessly," requiring skin graft to fill the resultant defect; (3) dissection in continuity to regional nodes with radical node dissection, even where no gross involvement is demonstrable.

The relative merits of the latter method of treatment versus simple excision will be discussed more fully later.

Pathology: After thorough microscopic re-evaluation of all histologic material available in the present material, all slides were reviewed by the author and a staff pathologist at the KU Medical Center.

All cases had had histologic confirmation at the

time of hospitalization; however, only about half of these slides were available for the present review, the others having been returned to local physicians.

Of those cases reviewed, 85 per cent showed malignant melanoma: primary, distant metastases, or local metastasis or extension just outside a line of excision. Only 15 per cent showed no residual local melanoma. These were cases in which excisional biopsy had been performed, resulting in a tissue diagnosis of melanoma. The tissues here reviewed were wider excisions performed at this hospital. It should be emphasized that of the 85 per cent showing malignant melanoma in this review, many were re-excisions following excisional biopsy.

Histopathologically, the lesions were classified, for the sake of interest only, as predominantly epithelioid, pagetoid, spindle or mixed types. Occasional endothelioid and even adenoid types were seen. Vascular and lymphatic invasion was seen with some frequency. In autopsy material, metastases were found in virtually every body tissue in some instances. In at least two cases with massive metastases, urinary melanin excretion was noted during life.

Statistics

Table 3 refers to a determinate population of 72 patients seen from 1946 to 1956.

Treatment	Local		Total
	Regional Dissection	Excision Only	
Survival 5 yrs.	19	5	24
Survival less than 5 yrs. ..	24	24	48
Per cent surviving 5 yrs. ..	44	17	33

It is interesting to note that, of those patients surviving five years, 79 per cent had had regional dissections.

An analysis of the differential significance of the figures 44 per cent and 17 per cent (Table 3), was performed. For these data and their respective populations, the $\frac{X}{\text{sigma}}$ value was found to be 2.4. The corresponding significance level is more favorable than 0.02. Therefore, in the present series, patients who underwent regional dissection for melanoma of the skin had a significantly higher five-year survival rate than those treated by local excision only.

Table 4 provides further analysis of regional dissection by comparing five-year survival rates in patients having regional dissections positive for metastatic melanoma versus those with negative regional dissections.

TABLE 4
PATIENTS UNDERGOING REGIONAL
NODAL DISSECTION

Results of dissection	Positive for	
	Metastases	Negative
Survival 5 years	8	11
Survival less than 5 years	19	5
Per cent surviving 5 years	30	70

It is seen that the five-year survival rate of patients undergoing radical node dissection in whom nodal metastases are present is favorably close to the overall five-year survival rate of the series (Table 3). Patients undergoing negative radical dissections, on the other hand have a very high survival rate in this series. Again, the difference between these two groups is significant at greater than the 0.02 level of probability.

These figures show a five-year survival rate of one-third of all patients with melanoma of skin and mucous membranes.

The figures of Pack compare rather closely with these results. He gives an average five-year survival rate of 37.7 per cent from 1946 to the present. Prior to 1946 he reports an average five-year survival of only 21.4 per cent.

A figure which perhaps reflects the frequency of silent blood-borne metastases in this disease is given by Booher and Pack. These investigators, in elective groin dissections for melanoma of the lower extremity in which no gross or microscopic evidence of regional metastasis was found, reported a five-year survival of only 40 per cent. This figure is considerably lower than that in the present series for radical dissections in which no metastases are found. The present series includes, however, a number of cases from the head and neck region in which the prognosis is usually more favorable.

Ten-year survival statistics are uniformly lower than five-year survivals. Metastases may become evident many more than five years after therapy. In the present series, the ten-year survivors do not comprise a directly comparable population, but the ten-year survival rate (seen 1946 to 1956) is approximately 20 per cent.

Examination of survival times proves instructive with regard to prognosis. Table 5 gives the survival times of 78 patients with melanoma of skin and mucous membranes seen here between 1946 and 1960, who subsequently expired due to melanoma. Treatment programs were similar to those in the previously considered 72 patient population.

TABLE 5

Survival time in yrs., not over ..	1	2	3	4	5	6	7	8	9
No. of patients ..	37	18	10	5	2	2	1	2	1

The 37 patients dying within one year of treatment represent 48 per cent of the total. Furthermore, of these 37, 18 died within the first three months after treatment. It is evident from these figures that malignant melanoma can pursue a fulminating course.

Discussion

The difference in survival rates according to treatment as demonstrated earlier implies that, although melanoma has a well known tendency to metastasize by blood stream, a significant percentage of patients experience regional lymphatic metastases which are amenable to therapy prior to blood-borne implantations. It would seem that some melanomas must metastasize by blood stream very early, as implied by Booher and Pack's 40 per cent survival rate in totally negative regional dissections. Yet there is a definite survival rate which has been shown here and by others to be significantly increased by aggressive therapy directed at elimination of metastases in the regional stage of lymphatic spread. This argument and the figures presented here point strongly in the direction taken by Pack: (1) excisional biopsy with a wide margin; (2) after positive diagnosis, a wide re-excision down to muscle and wide enough to require skin graft; (3) dissection in continuity where possible, and regional node dissection.

Chemotherapy

This line of attack has so far been one of desperation in cases of widespread metastases. In a well controlled study of the effects of nitrogen mustard and DON (6-diazo-5-oxo-L-norleucine) on tumor size and patient response, absolutely no effect was found in melanoma, whereas significant although temporary responses were seen in Hodgkin's disease and in some bronchogenic carcinomas (V.A. Study Group).

Summary

1. A series of 137 cases of malignant melanoma of skin and mucous membranes seen at Kansas University Medical Center from 1946 to 1961 has been reviewed and pertinent literature cited.

2. Results of treatment showed that in a determinate series of 72 patients seen from 1946 to 1956 there were 27 per cent more five-year survivors when treated with regional node dissection (whether nodes were involved or not), than when treated by local

excision only. This difference was statistically significant at the 0.02 level of probability.

3. Histopathology, pathogenesis, and experimental chemistry are reviewed. It was suggested that more profitable lines of research might be found outside the metabolic pathways of melanin in attempting to delineate the etiology of melanoma.

Conclusions

1. Malignant melanoma is a highly unpredictable neoplasm whose basic etiology is not yet known.

2. Prophylaxis consists of removing nevi in high-risk areas—palms of hands, feet, and genitals—preferably before puberty.

3. Immediate excisional biopsy should be performed on any nevus which itches, bleeds, grows, crusts, ulcerates, or suddenly increases in pigmentation while others remain normal.

4. With a positive diagnosis, treatment should be: radical excision of the primary site with skin grafting and radical regional node dissection.

5. With the earliest possible and most aggressive therapy, five-year survival rates can be improved.

Acknowledgements

Grateful acknowledgement is extended to F. A. Mantz, M.D., who reviewed the histopathological material and offered valuable guidance in the conduct of this study. The help of Dr. William Seeman was vital in the elaboration of the statistical methods employed. Personnel in the Tumor Registry of the Department of Pathology were most gracious in collecting cases and providing survival time information.

Acknowledgement is also extended to Dr. Jack Wortman who kindly provided the data regarding the incidence of carcinoma of the lung at this institution.

EDITOR'S NOTE: References may be obtained by writing the JOURNAL, 315 West 4th Street, Topeka, Kansas 66603.

ATS RESEARCH GRANTS

Applications for research grants awarded by the American Thoracic Society, medical section of the National Tuberculosis Association, will be received between now and December 15, 1963. Grants will be awarded for medical and social research in the field of respiratory diseases, including tuberculosis, for the year beginning July 1, 1964. For further information and forms, communicate with: Division of Research & Statistics, American Thoracic Society, 1790 Broadway, New York 19, New York.



Villous Adenoma of the Rectum With Potassium Loss

Edited by CHARLES T. HINSHAW, JR., M.D.*

Dr. Robert Martin (Surgery Resident): A 66-year-old woman, admitted to KUMC in February, 1962, complained of having one to five watery stools per day for the preceding 12 months. The watery material often resembled urine in color and was usually mixed with hard stool. Sometimes, only watery material was passed. There was no history of rectal bleeding, melena, anorexia, weight loss, or constipation. There were no urinary tract symptoms and sometimes the patient would urinate without passing any of the watery material from the rectum.

Physical examination was essentially normal. There were no masses palpable in the abdomen. There was no mass detected on rectal examination. Sigmoidoscopy revealed a polypoid, red, granular-appearing mass at approximately 11 cm. on the anterior wall of the rectum. This was biopsied.

Dr. Stanley R. Friesen (Moderator-Surgeon): This was the strangest history I have ever heard from a patient in whom we could see a mass in the upper rectum. She insisted, on repeated questionings, that her main trouble was the passage of water. Therefore, we tried to recall the things that would help us get close to the diagnosis, things that might present with the symptom of passing water by rectum. One of the most logical things that a person would think of would be a communication between the bladder or the urethra and the rectum, or the sigmoid colon. Accordingly, urological studies and investigations were carried out, all of which were normal. The bladder was normal, the ureters were normal, intravenous pyelogram studies and retrograde studies were normal. We could find no connection with the urinary tract.

Students very often ask me why we do certain rou-

tine tests. There are usually pretty good reasons for some of these, depending on what you are trying to find. This patient's chief complaint was water from the rectum of 12 months' duration at age 66. She had routine serum electrolytes drawn, and the potassium was very low.

Dr. Frank A. Mantz (Pathologist): What about her sodium and chlorides?

Dr. Martin: The serum chloride was 94 mEq/L, sodium 134 mEq/L.

Dr. Friesen: The sodium and chloride were relatively normal. The potassium was reduced out of proportion to other serum electrolytes. It was 3.2 mEq/L.

Dr. Mantz: Did she have symptoms of hypokalemia?

Dr. Friesen: No, though with further losses, symptoms might presumably have occurred. She did not recognize symptoms and we did not see physical signs due to hypokalemia. However, the electrocardiogram showed changes compatible with abnormalities in the serum electrolytes. Keep this in mind because this is diagnostic of the lesion we are going to talk about. X-ray examinations were done and a filling defect was seen in the rectum in an area that was otherwise filled with barium. It was not too diagnostic but made us think there was something there. On sigmoidoscopy, the tumor was seen in the upper part of the rectum, or the rectosigmoid. Through the sigmoidoscope one could see numerous papillae or fronds of tissue. The upper rectum is a very unusual location for the lesion to which I shall refer, a location where I have never seen it. These tumors usually occur in the lower rectum, and are usually quite large by the time they are first seen. They don't produce the symptom of bleeding so much as the ordinary rectal carcinoma, or even a pedicle polyp. This pa-

* Resident-Fellow, Department of Pathology, Kansas University Medical Center.

tient, then, had the low serum potassium with electrocardiographic confirmation, and sigmoidoscopic biopsy, which was repeated. Do we have the biopsies here? How were they reported?

Dr. Mantz: They were reported as villous adenoma.

Dr. Friesen: All of the villous adenomas I had seen before were in the ampullary part of the rectum. Here was one that was higher, in the rectosigmoid, and, therefore, I asked Dr. Martin to re-biopsy the mass. The second biopsy was reported again as villous adenoma.

The next problem was how to treat it. It was reported as a benign lesion on biopsy. Should it be treated like cancer? Some villous adenomas have been removed locally. I decided that it should be treated as a cancer because these may be malignant. The biopsy might come from a part that does not appear malignant. I thought the lesion should be excised widely and this was done.

Dr. Ferdinand C. Helwig (Pathologist): I think Dr. Friesen was using very good judgment in doing a cancer resection here. These lesions are extremely treacherous in their behavior, 40 per cent eventually becoming cancerous. Even when they are down in the ampullary portion of the rectum you may not be able to feel the tumor with the examining finger because they are so soft. So it is almost obligatory that you do proctoscopic and sigmoidoscopic examinations. And even then, an area of malignancy may lie hidden way up in the middle of one of these papillary growths, and you won't feel it because you can't feel the entire extent of the tumor. When it is up in the rectosigmoid area, your chance of apprehending a focus of cancer is practically non-existent. Therefore, knowing the behavior of these, that a high percentage of them become malignant, you must treat those which you can't be sure of as if they were.

We have many sections of this tumor. We always very carefully examine the base to see whether or not it has penetrated through the muscularis mucosa. Note that the muscularis mucosa is intact. The arborizing processes of the tumor are covered usually by just one layer of gland-like, sometimes mucin-producing, epithelial cells (*Figure 1*). There is a remarkably wide area involved.

I have seen two or three villous adenomas in the rectosigmoid, and not too long ago I ran into a very beautiful example in the cecum and ascending colon. But Dr. Friesen has emphasized that this is an unusual occurrence. It is a rare thing to find them elsewhere than in the rectum. Therefore, he was quite right in wanting substantiating histologic evidence about the character of this growth.

Strangely enough, at least in my own material, these tend to occur in the older age group. Sometimes

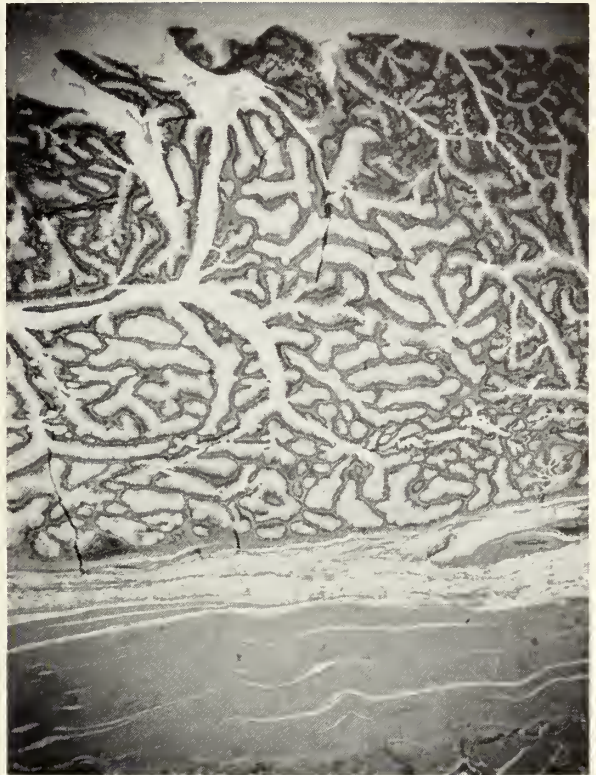


Figure 1. Villous adenoma of the rectum with excessive mucus secretion and intact muscularis mucosa.

in the 70's or older, rather than in the younger 40's or 50's. Many times these patients are quite debilitated. I know Dr. Binkley, who wrote extensively on this subject, would tend on these very old people who are very debilitated, simply to fulgurate, and to keep on fulgurating, and control the tumor in this way.¹

Goldgraber and Kirsner, a couple of Dr. Walter Palmer's men, reported in 1958, the occurrence of electrolyte imbalance in association with villous adenoma.² They described one death from serious hyponatremia with marked nitrogen retention. I was able to collect six other cases that I found, just at random search. These were similar cases, however, not with death but with exceptionally low potassium levels. And I noted also, in addition to potassium levels being down, that they will show marked hyponatremia and will often show a decrease in their chlorides as well. So in reconstituting their electrolyte faults, you have to consider also that there may be a loss in sodium and chloride, and that often these patients will show a striking decrease in their CO_2 .

It is of interest to me that someone didn't stumble onto this before, because I can remember so vividly the first case of this I saw. It was a woman who had been diagnosed by Dr. Ewing in New York as a

(Continued on page 454)

Obstetric Practice Guide

*Prepared by the Maternal Welfare Committee
of the Kansas Medical Society*

This "Suggested Guide for Obstetric Practice" has been prepared by the Maternal Welfare Committee of the Kansas Medical Society for distribution to physicians and hospitals in Kansas. It has been approved by the Kansas Academy of General Practice, the Kansas Medical Society and the Division of Maternal and Child Health of the State Department of Health and will appear in booklet form.

Suggested Guide for Obstetric Practice

Since 1948 the Maternal Welfare Committee of the Kansas Medical Society has conducted a continuous study of maternal deaths, through complete analysis of each case as it occurs. It was concluded on the basis of this experience, that many deaths could be avoided by the adoption of relatively uniform standards of obstetric practice throughout the state.

The following recommendations are not offered as a complete manual of obstetric care, but are designed as a concise, available, and practical guide in the areas which the Committee considered to be the source of most of the preventable obstetric mortality and morbidity.

Prenatal Care and Records

1. The first prenatal examination should include:

- (a) An adequate history and general physical examination.

- (b) Pelvic mensuration and evaluation by estimating the transverse diameter of the outlet and the diagonal conjugate of the inlet, and by palpating the pubic arch, the sacrum, and the ischial spines.

- (c) Laboratory work-up consisting of a serological test for syphilis, the determination of hemoglobin or hematocrit, a urinalysis, an Rh determination and blood typing.

- (d) A routine chest x-ray or a Mantoux test, when practical.

- (e) It is recommended that a PAP smear be made on the initial prenatal examination.

2. Subsequent prenatal visits should include:

- (a) Blood pressure determination.

- (b) Urinalysis.

- (c) Weight determination and nutrition recommendations.

- (d) Hemoglobin determination, at least twice during pregnancy; one of these during the last eight weeks.

- (e) Abdominal palpation and auscultation of the fetal heart tones during the last two months of gestation.

- (f) Adequate follow-up and study of any abnormalities discovered.

- (g) Rh antibody titers early in pregnancy and at six weeks before the estimated time of delivery on Rh negative patients unless the husband is known to be Rh negative. A careful history of previous complications which might relate to Rh factors. (Cord blood should be drawn on all infants of Rh negative mothers at time of delivery.)

Hospital Work-up and Records

1. A copy of the essential information from the prenatal record should be made a part of the hospital record and should be available at the time the patient is admitted to the hospital, i.e., identity cards carried by the patient may be prepared.

2. Adequate evaluation of the patient's history and physical condition should be made and recorded as soon as practicable after admission.

3. The hospital record should include pertinent progress notes, a summary of the condition of the patient on discharge, and a final diagnosis.

4. All orders for treatment should be signed by the physician.

Obstetric Consultations

It is recognized that the criteria for consultation cannot be rigidly set. Such factors as location of the physician to available consultants, and the experience of the physician in specific emergencies, may alter the circumstances for consultation. The following suggested recommendations apply whenever feasible, and should be given careful consideration by specialist and generalist alike.

1. Liberal use of consultation should be made. Competent consultants, who have one or more of the following qualifications, should be selected:

- (a) Board certification or the qualifications for certification.

- (b) Activity in the practice of obstetrics and full hospital privileges to perform gynecologic surgery.

(c) Recognized ability as an obstetrician in his own community.

2. Consultation is suggested for:

- (a) Prolonged labor.
- (b) Contemplated forceps delivery above the level of outlet forceps.
- (c) Transverse, face, compound, or other abnormal presentations.
- (d) Breech presentation.
- (e) Multiple pregnancy.
- (f) Severe toxemia of pregnancy.
- (g) Contemplated termination of pregnancy by first cesarean section only.
- (h) If vaginal delivery is contemplated when patient had previous cesarean section.
- (i) Obstetric hemorrhage before, during, or after parturition.
- (j) Other serious complications or complicated diagnostic problems.

The Use of Pituitary Extracts

Natural (pitocin) or synthetic (syntocin) oxytocin should be used. Obstetric pituitrin has no place in OB practice today and should be eliminated from the OB suite. When these preparations are used before delivery, it is urged that they be administered intravenously in dilute solution as a slowly-running drip. Experience has shown that this route and this method of administration is *preferable* to subcutaneous, intramuscular, or intranasal administration.

1. When an oxytocin is administered for stimulation or induction of labor at term:

(a) Supervision and attendance by a physician IS **OBLIGATORY**.

(b) The cervix should be soft, at least partially effaced, and dilatable.

(c) There should be no cephalo-pelvic disproportion.

(d) There should be no malpresentation of the fetus.

(e) The initial concentration suggested is ten units of oxytocin per liter of a solution of 5 per cent glucose in water.

(f) The administration of oxytocin should be stopped or slowed if contractions last longer than 60 seconds or occur at intervals of less than two minutes; also, if the fetal heart rate is noted to be less than 110 or more than 160 per minute.

(g) If oxytocin has been used for induction, it should be continued for at least one hour postpartum.

Obstetrical Analgesia and Anesthesia

Aspiration is the commonest hazard with obstetric analgesia and anesthesia. Suction and oxygen should be available at all times. For retching and vomiting the head should be immediately turned to the side and airway be assured.

1. Analgesia—most desirable where a trained nurse or physician anesthetist is not available.

(a) Nitrous oxide—oxygen is the safest (non-toxic, non-explosive, etc.) and should be used in an open system with no soda lime. This should be administered only with contractions and at delivery. The oxygen concentrations employed should be 20 to 50 per cent, thereby avoiding anoxia and complete anesthesia.

(b) Trilene—a good analgesic agent for self-administration by patient in late first stage or second stage of labor. A Duke-type inhalater mask is used. *If a subsequent general anesthesia is necessary, then EXTREME CAUTION should be taken to insure soda lime absorption is not used.* Trilene in contact with soda lime forms phosgene gas. This is a dangerous, extremely toxic compound.

(c) Narcotic antagonists (e.g. Nalline, Lorphan)—should be given to the mother if a large dose of narcotic has been administered shortly before delivery.

(d) Barbiturates—should not be employed if delivery is anticipated within eight hours.

(e) Tranquilizers—should be employed judiciously during labor, avoided in the premature.

2. Anesthesia

(a) Local anesthesia—its use is encouraged with or without analgesic agents.

(b) General anesthesia (by inhalation or intravenously):

—An appropriate dose of scopolamine or atropine should be given before a general anesthetic is begun.

—The same equipment as that noted below under "Spinal Anesthesia" should be available when administering a general anesthetic.

—A general anesthetic should be administered only under the supervision of an adequately trained person.

—It is best to avoid a general anesthetic, if possible, for a patient who has taken food or fluids shortly before or at any time during labor.

—A general anesthetic should not be administered where a premature infant is anticipated.

(c) Spinal anesthesia—epidural and caudal.

—A set-up for intravenous fluid administration is desirable. It is helpful to have an I-V started with a No. 18 or larger gauge needle.

—Oxygen should be available for administration under positive pressure.

—Vasopressors should be available.

—Adequate suction equipment should be on hand.

—Blood pressure should be checked at adequate intervals until stabilized.

Observation of Patients in Labor and Immediately Postpartum

1. No food should be ingested during active labor.

2. In early labor, evaluation of the character of the labor should be made, and frequent checks should be made of the patient's blood pressure, temperature and pulse, of the fetal heart rate, and of the condition of the cervix.

3. As labor advances, the intervals between these checks should be shortened.

4. Postpartum, the blood pressure, the height and firmness of the uterine fundus, and the amount of vaginal bleeding should be checked every 15 minutes for the first hour and every half hour for the second and third hours.

5. The findings of the above observations should be recorded on the chart.

Management of Severe Toxemia

1. Hospitalization is imperative.
2. Consultation is advised.
3. Bed rest is indicated.
4. The restriction of sodium intake is indicated.
5. The administration of diuretics is indicated.
6. Antitensive agents, which improve cerebral and renal circulation, may be administered for the control of blood pressure. Their use parenterally in adequate doses may be indicated.

7. Magnesium sulfate solution may be given for its sedative and anti-convulsant effect. The administration of magnesium sulfate should be discontinued if the urinary output becomes less than 100 cc. for four hours and/or the patellar reflexes disappear.

8. Large doses of barbiturates are best avoided because of their action of depressing cerebral oxygenation.

9. Severe or fulminating preeclampsia which does not respond to the measures suggested above should be treated by induction of labor, if it is feasible or by cesarean section if induction is not feasible.

10. Cesarean section is not indicated during the active phase of convulsive toxemia.

11. It should be noted that the objective of treatment after control is evacuation of the uterus.

General Management of Obstetric Hemorrhage

1. Blood loss should be replaced as soon as possible with whole blood.

2. While blood is being cross-matched, one or more intravenous infusions of glucose solution in water should be administered using No. 18 or larger gauge needles. (In extreme emergencies, type specific or O negative blood may be given without waiting for x-match.)

3. When indicated, plasma expanders, such as dextran or albumin also may be administered intravenously.

4. Consultation is indicated.

Management of Postpartum Hemorrhage

1. Prophylaxis:

Postpartum hemorrhage often may be anticipated and the proper preparations made for combating it. Blood typing, cross-matching, and the starting of in-

travenous fluids may be done in advance when such conditions as multiple pregnancy, operative delivery, prolonged labor, the overdistended uterus or hydramnios and uterine inertia alert the attending physician to anticipate excessive postpartum bleeding.

2. Active management:

If preparations have not been made for the patient who bleeds postpartum, the following measures are indicated:

(a) Blood should be drawn for cross-matching and fluids should be started intravenously through a No. 18 or larger gauge needle.

(b) Continuous administration of intravenous oxytocics should be given.

(c) The placenta should be examined.

(d) The vagina, the cervical canal, and the uterine cavity should be explored, but without deep anesthesia.

(e) Any lacerations discovered during examination should be sutured.

(f) Blood loss should be replaced with *whole* blood.

(g) Bimanual compression of the uterus by abdominal and vaginal hands with elevation of the uterus out of the pelvis.

(h) Clot observation tests are indicated (*see* "Management of Premature Separation of the Placenta," item 4).

General Management of Late Pregnancy Bleeding (Antenatal Hemorrhage)

1. If there is significant blood loss, intravenous fluids should be started and given through a No. 18 or larger gauge needle while an adequate amount of blood is being cross-matched for blood replacement.

2. *Rectal examination is absolutely contraindicated.*

3. As soon as blood is available, vaginal examination should be done with a double set-up, that is, preparations should be made for immediate cesarean section if it becomes necessary.

4. Frequent abdominal examinations are indicated and should include:

(a) Palpation for possible increase in the height of the fundus of the uterus as well as for increasing tone and tenderness of the uterus.

(b) Auscultation of the fetal heart tones for changes in rate.

5. When the duration of the gestation is less than 34 or 35 weeks, expectant treatment may be followed for a time if progressive premature separation of the placenta can be ruled out by such signs as painless bleeding, a soft, relaxed uterus, a normal fetal heart rate and no increase in the height of the fundus of the uterus. With these findings, the presumptive diagnosis is placenta previa.

6. If, with the above findings, bleeding subsides, and expectant treatment is decided upon in the hope

of increasing the chances of fetal survival, it is advisable to keep the patient in the hospital and to have a minimum of 1,000 cc. of whole blood available for transfusion *at all times*.

Management of Placenta Previa

1. If, under a double set-up, complete or central placenta previa is demonstrated by careful vaginal digital examination, and if bleeding is excessive and/or the patient is at term, the termination of pregnancy by cesarean section is indicated.

2. Lesser degrees of placenta previa may require termination of the pregnancy by cesarean section while others may require only simple rupture of the fetal membranes. Choice of the method of treatment should be made by evaluating such factors as parity, the condition of the cervix, the status of the fetus, and the degree of placenta previa demonstrated.

Management of Premature Separation of the Placenta

If the history and an examination lead to the diagnosis of premature separation of the placenta, the following appropriate measures are advised:

1. *Membranes should be ruptured.*
2. Blood should be available. (It should be emphasized that all the blood lost is not external bleeding.)
3. Consultation is indicated.
4. Use of fibrinogen:

(a) Five to ten grams of fibrinogen should be available.

(b) *Clot observation tests* should be done hourly, as follows: Five cc. of blood are drawn and placed in a small test tube. At adequate fibrinogen levels, a firm clot forms which does not lyse during a period of 30 minutes. With a critical lowering of plasma fibrinogen, no clot forms. Between these levels, the formation of a soft clot which lysis in less than 30 minutes indicates a serious fibrinogen depletion. It should be remembered that warming of the test tube affects lysis of clot.

(c) If clot observation tests reveal significant fibrinogen depletion, four or more grams of fibrinogen should be administered and the dose repeated as shown necessary by hourly tests. This may be necessary even though the patient is not bleeding externally.

(d) Laboratory tests should be used, when available, for speed.

5. Method of delivery if fetus is living and viable:

(a) Membranes should be ruptured.

(b) If delivery, as judged by the state of the cervix and the character of the labor, is not imminent, blood loss should be replaced and a cesarean section should be considered.

(c) It may be advisable to stimulate labor by instituting an intravenous oxytocin drip *after membrane rupture has been accomplished*.

(d) If intravenous oxytocin drip is used to stimulate labor, it should be continued postpartum until the danger of hemorrhage has passed.

6. Method of delivery if the fetus is dead:

(a) *Rupture of the membranes should be carried out as soon as possible.*

(b) Replacement of blood loss should be made.

(c) The institution of an intravenous oxytocin drip may be required to stimulate labor.

(d) Delivery by cesarean section is sometimes indicated on rare occasions in the presence of severe abruptio placentae when the probability of vaginal delivery being accomplished within a reasonable length of time is unlikely, and the progress of the disease is fulminating.

7. Every attempt should be made to correct shock before resorting to delivery by cesarean section.

Rupture of Uterus

Rupture of Uterus is a preventable tragedy. It may be best avoided if the following are always kept in mind:

1. Injudicious use of oxytocin for induction and stimulation of labor, especially if the physician is not in attendance. (The main cause of death in Kansas.)

2. Prolonged labor (labor greater than 24 hours) without evaluation and determination of cause.

3. Cephalo-pelvic disproportion and dyskinetic labor.

4. Attempt to deliver patient through partially dilated cervix.

5. Injudicious use and lack of knowledge concerning forceps.

6. Labor and previous cesarean section.

7. Abnormal contractions of the uterus (Constriction rings, etc.).

When a difficult delivery is envisioned, the lesser risk is cesarean section. After delivery, routine inspection of the cervix; in bleeding, exploration of the uterine cavity. No physician should depart from the hospital postpartum until the patient has recovered from anesthesia or has been observed for a period of one hour.

Puerperal Sepsis

Puerperal sepsis is defined as any two rises in temperature to 100.4° F (38° C) in any related or unrelated 24-hour period postpartum, excepting the first 24 hours, where cause is not explained by other than uterine infection. The main causative organisms are B hemolytic strep, staph aureus and E. coli.

1. Management:

(a) Complete physical examination.

(b) Urine culture, uterine vaginal culture, blood culture, when indicated.

- (c) Appropriate antibiotic and chemotherapy.
- (d) Evaluation of thrombophlebitis and institution of appropriate therapy.
- (e) Effect good uterine drainage and evacuate any formation of abscesses.
- (f) Supportive measures—blood, diet, etc.

Note on Accouchment Forcé

Manual dilation of the cervix for forceable delivery of the fetus is an outmoded procedure fraught with proven dangers, and it should never be done. A cesarean section has less risk and should be considered.

Note on Internal Version and Extraction

This procedure has been shown to be extremely hazardous for both mother and infant, cesarean section being the method of choice.

Note on Obstetrical Suite Equipment

Appropriate surgical, laboratory and anesthetic equipment to meet possible emergency complications of normal labor and delivery must be readily available in the Obstetric Unit.

Material Related to These Recommendations

Other material related to these recommendations of the Maternal Welfare Committee:

1. *Standards for Hospitals*—Kansas Medical Society, Kansas Hospital Association.
2. *Minimum Standards of Obstetrical Care*—Maternal Welfare Committee of the Kansas Medical Society, Kansas State Board of Health.
3. *Care of the Newborn*—Kansas Medical Society, Kansas State Board of Health.
4. *Hospital Regulations*—Kansas State Board of Health.

Tumor Conference

(Continued from page 449)

villous adenoma and she was seen in our hospital in 1930 and died. We didn't know why she died. At the autopsy we knew she had this watery diarrhea and we knew that she had this huge tumor. It practically filled the entire rectum but she died a rather strange and mysterious death. That was 33 years ago. We didn't have flame photometers then. We didn't know what a hypopotassemic death was; we hadn't even dreamed of it at that time. Now I know, and I'm sure everyone else will recall instances of death in this fashion.

Dr. Friesen: Do you want to speculate why these patients have a low potassium? There is a large surface area in a villous adenoma. The glands of the villous adenoma are secreting mucus. If you examined this material microscopically you would probably find mucous cells, cells which contain in their walls potassium, just like the cells of a banana or the cells of beef. They all contain potassium. One loses excessive amounts of potassium in the mucus from a lesion such as this.

Dr. Helwig: You might say that studies have been made on this watery material and as high as 60 milliequivalents per day of potassium have been lost.

Dr. Friesen: I had forgotten that. That's true. This is more than is required for the daily maintenance of potassium. We are fortunate to have Dr. Helwig here to discuss this kind of case. He is one of the international authorities on colonic lesions.

References

1. Binkley, G. E., and Sunderland, D. A.: Diagnosis and Treatment of Papillary Adenomas of the Rectum. *Am. J. Surg.* 75:365-68, Feb. 1948.
2. Goldgraber, M. B., and Kirsner, J. B.: Papilloma of the Large Intestine: A Clinical-Pathologic Correlation. *Gastroenterology* 35:36-49, Jul. 1958.

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CAUSES OF MATERNAL DEATHS IN KANSAS 1956-July, 1963

Total Deaths	137
Direct Obstetric	
Hemorrhage	48
Infection	22
Toxemia	18
Vascular Accidents	13
Anesthesia	5
Other	5
Indirect Obstetric	
Cardiac	11
Metabolic Disease	2
Vascular Disease	2
Infection	2
Other	2
Non-Related	
Accidental	3
Blood Dyscrasia	1
Malignancy	1
Suicide	2

Report by Maternal Welfare Committee.

CONFIDENTIALITY LAW

G.S. 65-177-65-179. 1961 Suppl. Relating to information secured in connection with certain medical research studies, and requiring confidential treatment of such information; providing that such information be inadmissible as evidence before courts or administrative bodies; providing that no liability arise from the furnishing of informaton; and making unauthorized disclosure of such information punishable as a misdemeanor.

Section 1. The term "data" as used in this act shall be construed to include all facts, information, records of interviews, written reports, statements, notes, or memoranda secured in connection with an authorized medical research study. The state board of health may authorize the state health officer to receive data secured in connection with medical research studies conducted for the purpose of reducing morbidity or mortality from maternal, perinatal and anesthetic causes. Such studies may be conducted by the state health officer and his staff or by the state health officer jointly with other qualified persons, agencies or organizations. Where authorization to conduct such a study is granted by the state board of health, all data voluntarily made available to the state health officer in connection with such study shall be treated as confidential and shall be used solely for purposes of medical research. Research files and opinions expressed upon the evidence found in such research shall not be admissible as evidence in any action in any court or before any other tribunal: Provided, That this act shall not affect the right of any patient or his guardians, representatives or heirs to require hospitals, physicians, sanatoriums, rest homes, nursing homes or other persons or agencies to furnish his hospital record to his representatives upon written authorization, or the admissibility in evidence thereof. No employee of the state board of health shall interview any patient named in any such report, nor any relative of any such patient: Provided, That nothing in this act shall prohibit the publication by the state health officer or a duly authorized cooperating person, agency or organization, of final reports or statistical complications derived from morbidity or mortality studies, which reports or compilations do not identify individuals, associations, corporations or institutions which were the subjects of such studies, or reveal sources of information.

Section 2. The furnishing of data to the state health officer or his authorized representative, or to any other cooperating agency in such medical research study, shall not make any physician, hospital, sanatorium, rest home, nursing home or other persons or agency furnishing such data, subject to any action for damages or other relief.

Section 3. Any disclosure of data in violation of the provisions of this act shall be a misdemeanor and punishable as such. Nothing herein contained shall be construed as conferring upon the state health officer the power to demand or require that any physician or other person furnish any data other than as may be expressly required by law.

PROGRAM

KANSAS ACADEMY OF GENERAL PRACTICE

Annual Meeting and Symposium

Jayhawk Hotel October 24-25-26, 1963 Topeka, Kansas

Thursday Evening, October 24, 1963

8:00 p.m. Board of Directors Meeting

This is a practical and informative meeting of Academy members and is open to all. Any problems or ideas can be presented and discussed.

Friday, October 25, 1963

8:30 a.m.-5:00 p.m. Registration all day

MORNING SCIENTIFIC PROGRAM

"DOCTOR WATCH YOUR STEP"

Moderator: Norman H. Overholser, M.D.
President, Kansas A.G.P.

10:00-10:30 a.m. "Iatrogenic Surgical Problems"
Elmer Key Sanders, M.D., Houston, Texas

10:30-11:00 a.m. "Iatrogenic Invalidism"
Edward M. Litin, M.D., Rochester, Minnesota

11:00-11:15 a.m. RECESS

11:15-11:45 a.m. "Diseases of Medical Progress"
Walter C. Alvarez, M.D., Chicago, Illinois

12:00 Noon Noon Luncheon, Physicians and Wives
Presiding: Floyd C. Beelman, M.D.
President-Elect, K.A.G.P.

AFTERNOON, ROUND-TABLES

2:00-5:15 p.m. Audience will be divided into three sections and
speakers will rotate from room to room spending
one hour with each section.

"Iatrogenic Surgical Problems" Elmer Key Sanders, M.D.
Moderator: Galen W. Fields, M.D., Vice-President, Kansas A.G.P.

"Iatrogenic Invalidism" Edward M. Litin, M.D.
Moderator: William G. Chappuie, M.D., Member, Board of Directors

"Diseases of Medical Progress" Walter C. Alvarez, M.D.
Moderator: Floyd C. Beelman, M.D., President-Elect, Kansas A.G.P.

5:30-6:45 p.m. Cocktail Reception for Doctors, Wives and Guests

7:15 p.m. Annual Dinner

Saturday, October 26, 1963

8:30 a.m. Breakfast and Business Meeting

1:30 p.m. FOOTBALL, Lawrence

KANSAS UNIVERSITY—OKLAHOMA STATE UNIVERSITY

A block of tickets has been assigned the Academy

The President's Message

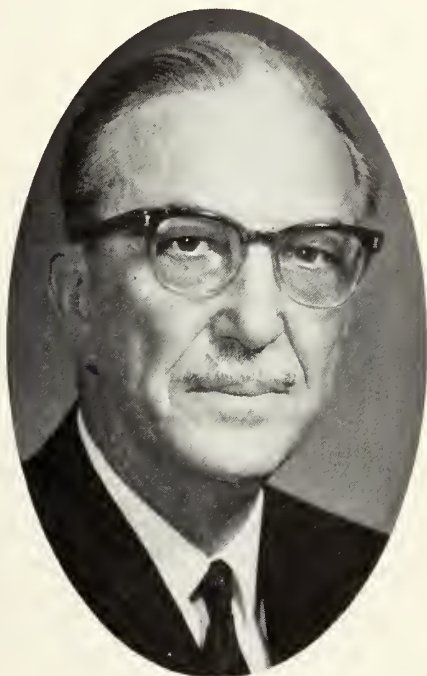
DEAR DOCTOR:

A few weeks ago, I had the pleasure of attending the Fall Conference of the Woman's Auxiliary which is held each September in the home town of the President. This year the Conference was held in Sabetha, the home of Mrs. Virgil E. Brown, and I thought I would take this opportunity to share with you some of my reactions and experiences.

During the course of the Conference, I had the opportunity to become acquainted with the Auxiliary officers, councilors, and committee chairmen, and, through their reports, learned something of the magnitude of the projects and activities in which the Auxiliary is engaged throughout the year. I heard well prepared reports on such projects as AMEF, community service, legislation, mental health, safety, school health, to mention only a few. Many of these are cooperative efforts with corresponding committees of the Kansas Medical Society. An example of such cooperation is the outstanding job currently being done by the Auxiliary's committee on Mental Health in working with the Society's Mental Health committee toward a successful Kansas Congress on Mental Illness and Health. This Congress, which will be held in Topeka on October 24, is one of the major projects of the Society this fall.

I think of our Councilor District meetings, another example of mutual cooperation, and know that you will agree that the Society is most fortunate to have such a conscientious and enthusiastic Auxiliary with which to work.

Certainly, through their many efforts, they have earned our respect, gratitude, and support.



Sincerely,

H. St. Clair O'Donnell M.D.

President



Editorial COMMENT

Special attention is called to several items in this issue of the JOURNAL relating to the practice of obstetrics. Physicians whose practice includes this area of service might wish to preserve their JOURNAL for future reference.

The Committee on Maternal Welfare, working closely with the State Board of Health, spent many hours during the past several years in the preparation of the "Suggested Guide for Obstetric Practice." Much discussion preceded the writing of this doctrine. Each item included in the suggested guide received the approval of a large majority of the Committee. Wherever differences of opinion occurred these were discussed at length until a satisfactory conclusion was achieved.

The "Suggested Guide for Obstetric Practice" is, therefore, exactly what the title states. It is another project among many representing efforts by this Committee to reduce to the absolute minimum the maternal deaths in this state.

The Committee would appreciate it if each physician practicing obstetrics would become familiar with the material contained in that article and would voluntarily be guided by those suggestions.

Another project of the Committee on Maternal Welfare in which the State Board of Health participates is the careful review of maternal deaths. Reports of these studies appear frequently in the JOURNAL. They are disguised to avoid identifying the physician or the patient, but all essential facts are retained. Appearing elsewhere in this issue is the law enacted by the Kansas Legislature which exempts such report-

ing from the usual legal hazards. This was done because the Legislature recognized the scientific value of this Committee project and expressed its approval and offered this legislative aid in cooperation with the Committee's efforts to reduce maternal mortality.

Statistics Concerning the Society

The Kansas Medical Society, through agreement with Blue Shield, is now for the first time preparing statistical data concerning physicians on IBM equipment. This will include the information returned by the members of this Society in the questionnaire sent out several months ago. Information will not become available for some time, but after the data is prepared this project will serve the Society in obtaining facts concerning its membership that now require laborious effort to discover.

For example, if material is to be disseminated to the physicians practicing a single specialty, the executive office manually checks through the card record of each member. Even this is often less than accurate. There are times when the women physicians of the Society wish to meet. Obtaining their names again requires the examination of every member's card. Once this is tabulated on IBM equipment, answers to questions of this type can be obtained almost instantly. This additional service will be available to any member desiring statistical information regarding the physicians of this state. It will be ready for use by January 1.

It became necessary not long ago to make a sta-

tistical study of the ages of the members of this Society. The project involved several days' time and, because it was done manually, cannot be completely accurate. It may be of interest, however, to note that of the 1,850 members there are twelve under the age of 30, the youngest being 28. There are three beyond the age of 90, the oldest, if the manual examination is accurate, is 93. Seventy-six members are 39 years of age; 74 members are 42 years of age. Those were the two ages most frequently found. The average age of all members of the Society at this time is 47.72 years.

One other piece of statistical information which might be of interest when the cards are completed relates to Blue Shield. Currently there are approximately 1,800 participating physicians. It appears that 528 received less than \$1,000 last year for services rendered Blue Shield subscribers. Some of the reasons for this are readily apparent. There are areas of the state where Blue Shield enrollment is not high; there are specialties in medicine in which few services are paid under Blue Shield. At the other extreme, it is noted that 41 participating physicians each received more than \$15,000 for services rendered Blue Shield subscribers.

The above reports only a few examples of what can be obtained through the IBM membership records. This project will be useful to the Society and to Blue Shield. These services will be made available to any member upon request.

TETANUS IMMUNIZATION

(EDITOR'S NOTE: *The American Medical Association plans to use the following statement as a public news release in a nationwide campaign to increase tetanus immunization. It was felt that physicians might wish to be familiar with this statement issued by the AMA.*)

The American Medical Association is establishing an intensive and continuing campaign to improve the immunization of the American people against tetanus. This program will start in September, 1963, and will consist of public and professional education urging the public to get, and renew, inoculations with tetanus toxoid.

Tetanus, formerly called "lockjaw," is completely preventable. The armed services, who provide tetanus immunization routinely, rarely have a case. During recent years an average of 400 cases annually have occurred in the United States. About sixty per cent of those afflicted have died. All of these deaths were unnecessary.

The death rate from tetanus is highest among young children. Emphasis therefore should be placed

on inoculating them in infancy. Usually this is done with "triple vaccine," including diphtheria and whooping cough along with tetanus toxoid. Three injections four weeks apart, and a booster dose within 6 to 12 months, will establish immunity.

After immunity has been established, everyone should maintain protection by booster doses every five years, and a similar booster dose after any injury that might cause tetanus. If immunity has not been established in infancy, an original series of three injections should be given at any age, and similarly followed by booster doses.

Tetanus toxoid is an extremely effective preventive, and it is not known to produce serious side effects. The tetanus antitoxin, on the contrary, occasionally produces serious reactions in people allergic to horse serum. It is now used only for treatment of persons who have failed to get advance inoculations with toxoid. Both tetanus and the danger of allergic reactions can be avoided by preventive inoculations with tetanus toxoid, before injury.

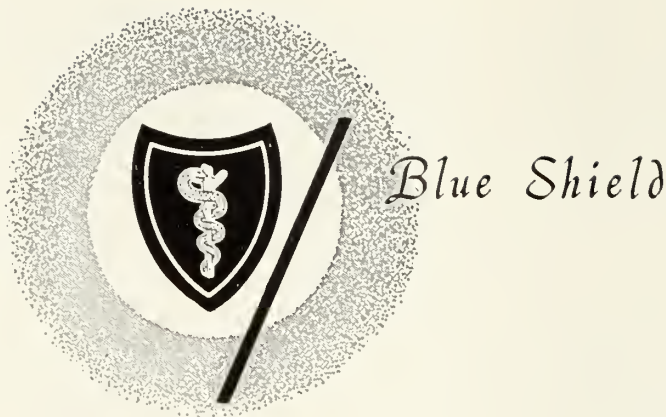
Even trivial puncture wounds permit the entrance of tetanus bacteria. The tetanus organism is commonly found in the soil. Out-door living, gardening and sports make everyone eligible for infection. The bacilli grow in the absence of air, and this is why puncture wounds are particularly liable to produce the disease. Automobile accidents and the disasters for which we prepare in civil defense also produce injuries subject to tetanus contamination. Immunization with tetanus toxoid before injuries happen is the only effective protection.

Many adults are unaware of their need for periodic booster shots. Each physician should urge his patients to be immunized and to regularly renew protection against tetanus. A high level of immunity in the population can reduce the present needless occurrence of deaths from tetanus. The American Medical Association urges medical societies and appropriate health agencies to accelerate their efforts in the prevention of tetanus.

The Clendening Medical Library has assumed responsibility for the readers and reference service formerly offered by the Stormont Medical Library. A list of recent acquisitions at the library can be found on page 464 of this issue.

Address requests to:

The Clendening Medical Library
University of Kansas Medical Center
Rainbow Boulevard at 39th Street
Kansas City, Kansas 66103
Telephone: TA 2-5252



Federal Employee Program Revisions Effective November 1

Revisions in the Blue Shield Federal Employee Program will be effective November 1, 1963. Included will be some new benefits and a revised Fee Schedule which will produce an overall increase in payments of approximately 7 per cent.

The Blue Shield Federal Employee Program is a nationwide plan providing prepaid medical-surgical benefits for the federal government's Civil Service Commission employees. In Kansas, the program is underwritten by Kansas Blue Shield and operates as an indemnity plan without service benefit income limits. Blue Cross underwrites a similar plan for prepayment of hospital costs. The combined programs have been in effect since July, 1960, and present Kansas enrollment amounts to roughly 28,000 persons.

Major changes in Federal Employee Program benefits are made effective to coincide with annual reopening dates for enrollment. Such benefits as may be revised are then available each November. Following is a brief résumé of changes for the coming year.

Revised Fee Schedule

Both the High and Low Option Blue Shield Federal Employee Schedules of Allowances will contain numerous procedures with allowances rearranged according to the application of conversion factors to the Professional Service Index, a scale devised by the National Association of Blue Shield Plans and based upon the composite relativity of Fee Schedules from all the nation's Blue Shield Plans.

While a small number of procedures received reduced allowances and some fees are unchanged, the majority of services have been provided upgraded maximums by this conversion. The result is an

actuarial estimate that overall payments to physicians will increase by 7 per cent.

Added In-Hospital Medical Care Benefits

Former in-hospital medical care limitations applying to care for pulmonary tuberculosis and nervous/mental disorders in a general hospital have now been removed. Beginning November 1 such cases will be eligible for 120 days' care under the High Option Plan and 30 days' care under the Low Option Plan per confinement.

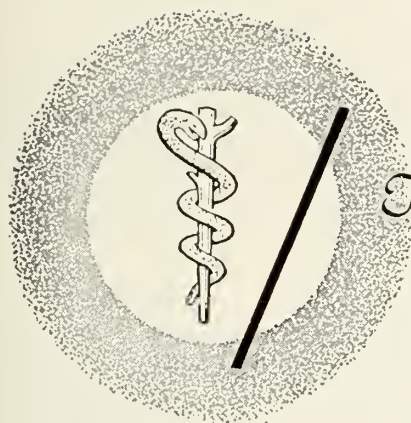
A second new medical care benefit is the provision of Intensive In-Hospital Care Benefits under the High Option Plan. High Option Federal Employee Program Subscribers admitted to the hospital with a serious disease requiring additional time and study above usual care will be eligible for this coverage. Such intensive care cases may receive up to twice the daily care allowances for as long as ten days, after which regular medical days will be paid.

Intensive care allowances are not available under the Low Option Plan.

New Benefits for Obstetric and Pediatric Care

Regular daily in-hospital medical care allowances will be available for admissions for false labor or threatened miscarriage if delivery does not occur during the confinement. In the past, such care was considered to be indemnified under the fee provided for obstetrical delivery. In the future, obstetrical delivery allowances will be separate in cases where delivery is in subsequent admissions to false labor or threatened miscarriage.

Also beginning in November will be eligibility of
(Continued on page 463)



The Kansas Press Looks at Medicine

Editor's Note. In this section the JOURNAL reproduces editorials relating to medicine which have appeared in the lay press. An effort is made to include both favorable and unfavorable comments, and the Editorial Board in no instance assumes responsibility for the opinions expressed.

NOT A PROBLEM

The controversy over Medicare—the scheme to provide certain government medical benefits to everyone receiving social security payments, whether they want them or need them—has obscured the true-old-age issue, if issue is the proper word. Medicare's proponents assert or at least intimate that the elderly population is in dire straits, and that only a multi-billion dollar Welfare State program can adequately help them.

Some years ago the American Medical Association set up a Committee on Geriatrics to look into the particular diseases of old age. It found, believe it or not, that the problems it was designed to investigate did not really exist! So it moved into other areas—and here are the general conclusions it came to, based on a mass of evidence.

1. There are no diseases that occur just because of the passage of a certain number of years.

2. There are no problems of people over 65, except those imposed by retirement, that are not shared by all other age groups.

3. Most illness and deterioration are a result of environment, and can be modified by a change in environment.

4. The term "problems of aging" is fallacious—a more accurate term would be the "opportunities of aging."

5. The key to successful aging is successful living.

To arbitrarily say that once a man or woman has reached a certain age he becomes another person, and falls into utterly different medical and financial categories than he did the day before, is to propound a fallacy and to do these people a grave injustice. The pro-Medicare arguments may be good political arguments—though even that has yet to be established—but they certainly aren't good or accurate medical,

financial or social arguments.—*Liberal Southwest Times*, September 9, 1963.

TRY AGAIN, A.M.A.

In its never-say-die efforts to block legislation which would provide medical care for the nation's elderly citizens under the Social Security and Railroad Retirement Systems, the American Medical Association maintains without letup that most of the oldtimers are in good shape—financially—and therefore need no help along the lines of medicare.

Backers of medicare have contended all along that A.M.A.'s position lacks foundation—and recent statistics released by the U. S. Department of Commerce strongly support them.

For instance, of the 5,100,000 families in the nation in 1960 with either the husband or wife 65 years of age or older, more than a third of 3,700,000 of these families with no other breadwinners—1,300,000—had a family income of less than \$2,000 a year.

An annual income of less than \$1,000 a year was reported by 451,000 families; between \$1,000 and \$1,500 by 447,000 families, and between \$1,500 and \$2,000 by 460,000 families.

In the 4,800,000 families where the husband was 65 or older, approximately 150,000 of them had no money income at all, and 2,300,000 received incomes under \$2,000 a year.

Of the 977,000 mothers or mothers-in-law 65 or older who resided with married sons or sons-in-law, 296,000 reported no income and 519,000 received less than \$1,000.

These oldtimers need no help to meet the high costs of medical care?

A.M.A. had better come up with a better alibi for its position.—*Parsons News*, August 29, 1963.



Book REVIEWS

TEXTBOOK OF PATHOLOGY WITH CLINICAL APPLICATION by Stanley L. Robins, M.D. (2nd Edition) W. B. Saunders Company, Philadelphia, 1962. 1190 pages, \$19.00.

This textbook of pathology is well written in a readable style, largely by a single author. Since it first appeared in 1957 it has been well accepted by pathologists and especially by medical students. The second edition shows some improvements of which the most outstanding is the external appearance of the book with a new, sturdy cover which changed its color from green to red; by making the pages somewhat taller the book became more slender and in its overall appearance more attractive. The subject matter has been altered somewhat with a few newer pictures having been added here and there, consideration given to newer developments, especially in the field of electron microscopy, histochemistry and biochemistry and the addition of pertinent newer reference material.

Beginning with "Abnormalities of Cell Growth" approximately the first one-third of the book covers general pathology. There is consideration of neoplasia and systemic diseases are presented in their entirety and not fragmented into several organ systems. Related diseases are frequently grouped together as: the collagen diseases, the diseases of infancy and childhood. The chapters on individual organs or systems are in a logical sequence with an adequate coverage. There is usually an outline of lesions, relevant normal features of the tissues or organs, the major pathology and extensive clinical-pathological correlation. The current overall framework of medicine is presented in relation to pathology. This has been a strong feature of this book as no recent textbook of pathology has similar emphasis on clinical-pathological correlation. The general organization and the use of special pathological descriptions make the material readily available. When items are listed, brief generalizations are frequently added to aid in making the association meaningful. The text is amply illustrated with black

and white photographs which generally are of good technical quality. References are minimal and offered as collective reading rather than documentary evidence of material presented.

This is a fine textbook of pathology and especially because of the clinical-pathological correlations a timely addition. It will be useful to both students and pathologists, especially the former. It is an effective aid in understanding disease processes rather than a shelf reference.—*H.T.L.*

PRIMER OF CLINICAL MEASUREMENT OF BLOOD PRESSURE by George E. Burch, M.D. and Nicholas P. DePasquale, M.D. The C. V. Mosby Company, St. Louis, 1962. 141 pages, \$5.50.

One of the commonest acts of the practicing physician is the clinical measurement of the blood pressure. One would suppose that such a common procedure would be well understood and uniformly well performed by all involved, but probably a minority of us understand most of the fundamental factors involved. These are quite well covered in this "primer," and I put the primer in quotation marks because it is really not quite appropriate in the title of a book that explores at some depth a majority of the factors involved in the clinical determination of the blood pressure.

The first chapter deals with the history of the recording of the blood pressure, and it is interesting to see some of the complicated but unsatisfactory devices that preceded our present day apparatus. The second chapter is concerned with the physiology of the arterial blood pressure, and this is followed by a chapter on the clinical measurement of the blood pressure. Other chapters deal with sources of error in the determination of the blood pressure, factors that affect the arterial blood pressure, normal values, and diagnostic applications.

There is a rather extensive bibliography containing

something over 200 references which should be helpful to those who are interested in pursuing the subject at even greater length and in more detail. The brief index (three pages) is only marginally adequate, and this reviewer suggests that the usefulness of the book would have been greater if the index had been expanded at the expense of the bibliography if one had to choose between the two.

The book is well printed and profusely illustrated, and the binding is good.—*J.D.R.*

GYNECOLOGY, Langdon Parsons, M.D. and Sheldon C. Sommers, M.D. W. B. Saunders Company, Philadelphia, 1962. 1,250 pages, \$20.00.

Never has there been a correlated book that I have read that is like this one—symptoms, pathology, etiology, endocrinology and treatment—all within one cover but without surgical procedures.

The foreword states that this book brings forth a new concept in medical writing. It was quite by chance that these doctors got together to write this book, but both are productive writers in their own right; one a pathologist and the other a gynecologist. So, this composition could not be anything but beneficial to anyone who practices gynecology.

This book takes the field of gynecology from birth to the grave and all the problems characteristic of the respective age groups. There are overlaps, which are expected when such a large field is covered, but this does not bore the reader.

The authors cover the field of genetics in a fashion that make it not only interesting, but explains why certain conditions seen in everyday practice exist.

Marital counseling and sexual problems are included, and it is too bad that monographs could not be sent to every practicing physician. The subject is most comprehensive and enlightening.

Most textbooks on this subject seldom dwell on the breasts and their examination, but what physician examines them more as a routine procedure than a gynecologist? This is a very important addition in my estimation.

All in all, I recommend this book. Even though it is a very large volume it is quite complete.—*C.D.S.*

PULMONARY STRUCTURE AND FUNCTION (CIBA FOUNDATION) edited by A. V. S. de Reuck and Maeve O'Connor. Little, Brown and Company, Boston, 1962. 403 pages, \$11.50.

This book is another in the series of Ciba Foundation Symposium and is excellent. It covers recent ad-

vances in pulmonary anatomy, proprioceptive control of breathing, the glomus pulmonale, bronchial gas flow, cellular structure and mucus activity in the bronchial tree and alveoli, mechanics of respiratory structures, ventilation-perfusion relationship, pulmonary gas exchange measurements using radioactive gases, physiological and biochemical effects of pulmonary artery occlusion and the human lung, as well as other interesting discussions. It is very interesting to anyone interested in recent advances in pulmonary anatomy and physiology.—*W.N.*

Blue Shield

(Continued from page 460)

medical care benefits for newborn infants requiring additional observation for suspected latent illness beyond the discharge date of the mother. Formerly, these cases were not eligible for basic benefits unless prematurity or definitive treatment was undertaken.

Supplemental Benefits Liberalized

A number of liberalizations will be effective under the Supplemental Benefits portion of the Blue Shield Federal Employees Program. Supplemental Benefits is a Major Medical Plan which is automatically part of all federal employee contracts and which provides co-insurance benefits towards services not covered under the Basic Benefits portion of the plan. The following is an abbreviated list of some of the new changes:

- Benefit period maximums of \$10,000 under High Option and \$5,000 under Low Option have been removed. No yearly maximums will be employed.
- Only two individual deductibles will be applied against any family during any future twelve months' period. Formerly, regardless of family size, each member was obliged to satisfy a deductible.
- Full supplemental benefits will be available for drugs prescribed for nervous/mental conditions.
- Under certain conditions psychological evaluation tests will be covered subject to the deductible.

Blue Shield will be sending more complete information regarding Federal Employee Program revisions, including specific lists of upgraded allowances, to physicians and their medical assistants in the near future. Also, in areas of relatively heavy federal employment, medical assistant educational meetings will be held to further acquaint office personnel with the new changes.

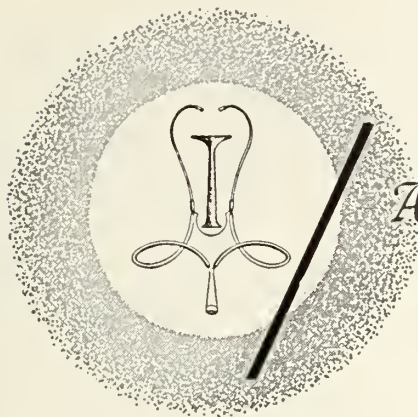


Along The BOOKSHELF

Clendening Medical Library

RECENT ACQUISITIONS

- Bernreiter, Michael. *Electrocardiography*. 2d ed. Lippincott, 1963.
- Bockus, H. L. R. and others. *Gastroenterology*. v.1, 1963. 2d ed. Saunders, 1963.
- Bonin, G. von. *The evolution of the human brain*. University of Chicago Press, 1963.
- Bourne, G. H. and Golarz, M. N., eds. *Muscular dystrophy in man and animals*. Hafner, 1963.
- Brown, J. J. M., ed. *Surgery of childhood*. Williams, 1963.
- Burrow, J. G. *AMA: voice of American medicine*. Johns Hopkins Press, 1963.
- Busch, Harris, ed. *Biochemical frontiers in medicine*, by five authors. 1st ed. Little, Brown, 1963.
- Cabrera Camarena, Enrique. *Electrocardiographic interpretation*. McGraw-Hill, 1963.
- Cecil, R. L. F., ed. *Cecil-Loeb textbook of medicine*. 11th ed. edited by Paul B. Beeson [and] Walsh McDermott. Saunders, 1963.
- Colbeck, J. C. *Control of infections in hospitals*. American Hospital Association, 1962.
- Compere, B. L. and others. *Pictorial handbook of fracture treatment*. 5th ed. Year Book, 1963.
- Cori, C. F. and others, eds. *Perspectives in biology*. Elsevier, 1963.
- De Sanctis, A. G. and Varga, Charles. *Handbook of pediatric medical emergencies*. 3d ed. Mosby, 1963.
- Disorders of blood and blood-forming organs in childhood. [by] H. S. Baar [and others]. Hafner, 1963.
- Ellis, P. P. and Smith, D. L. *Handbook of ocular therapeutics and pharmacology*. Mosby, 1963.
- Fidler, G. S. and Fidler, J. W. *Occupational therapy, a communication process in psychiatry*. Macmillan, 1963.
- Fishbein, Morris, ed. *Birth defects*. Lippincott, 1963.
- Fox, S. A. *Ophthalmic plastic surgery*. 3d ed. Grune & Stratton, 1963.
- Freeman, H. L. and Farndale, James, eds. *Trends in the mental health services*. Macmillan, 1963.
- Freeman, J. T., ed. *Clinical principles and drugs in the aging*. Thomas, 1963.
- Gardner, E. D. *Fundamentals of neurology*. 4th ed. Saunders, 1963.
- Goldstein, M. J. and Palmer, J. O. *The experience of anxiety*. Oxford University Press, 1963.
- Head, Sir Henry. *Aphasia and kindred disorders of speech*. Hafner, 1963.
- Hinshaw, H. C. and Garland, L. H. *Diseases of the chest*. 2d ed. Saunders, 1963.
- Hofling, C. K. *Textbook of psychiatry for medical practice*. Lippincott, 1963.
- James, T. N. and Keyes, J. W., eds. *The etiology of myocardial infarction*. 1st ed. Little, Brown, 1963.
- Jolly, Clive. *Local analgesia*. Little, Brown, 1963.
- Kalter, S. S. *Procedures for routine laboratory diagnosis of virus and rickettsial diseases*. Burgess, 1963.
- Klein, Melanie. *Our adult world, and other essays*. Basic Books, 1963.
- Lawton, E. B. *Activities of daily living for physical rehabilitation*. McGraw-Hill, 1963.
- Lenz, Widukind. *Medical genetics*. Lanzl, E. F., tr. University of Chicago Press, 1963.
- Merritt, H. H. *A textbook of neurology*. 3d ed. Lea & Febiger, 1963.
- Moses, Campbell. *Atherosclerosis; mechanisms as a guide to prevention*. Lea & Febiger, 1963.
- Obstetrics and gynecology. [by] J. Robert Willson, and others. 2d ed. Mosby, 1963.
- O'Connor, N. and Hermelin, Beate. *Speech and thought in severe subnormality*. Macmillan, 1963.
- Palmer, E. D. *Clinical gastroenterology*. 2d ed. Harper & Row, 1963.
- Reeh, M. J. *Treatment of lid and epibulbar tumors*. Thomas, 1963.
- Rickles, N. K., ed. *Management of anxiety for the general practitioner*. Thomas, 1963.



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the DOCTOR'S CALENDAR. Notice of the session is posted in advance to allow the physician time to make preparations.

OCTOBER

- Oct. 24 1st Kansas Congress on Mental Illness and Health, Jayhawk Hotel, Topeka.
- Oct. 24-26 Kansas Chapter of the American Academy of General Practice. Jayhawk Hotel, Topeka.
- Oct. 25 Kansas Association for Mental Health. Jayhawk Hotel, Topeka.
- Oct. 27 Seminar on the Chemotherapy of Cancer, Sedgwick County Medical Society Building, Wichita, 9:00 a.m. to 5:00 p.m. Registration fee: \$15, practicing physicians; \$2, residents and interns. Apply to: Midwest Medical Research Foundation, 3241 Victor Place, Wichita 8. Advance Registration Required.
- Oct. 28-
Nov. 1 Annual Clinical Congress of the American College of Surgeons, San Francisco. Contact: American College of Surgeons, 40 E. Erie St., Chicago 11.
- Oct. 30-
Nov. 2 12th Biennial Rocky Mountain Medical Conference, Las Vegas. Contact: Thomas S. White, M.D., Gen. Chmn., Rocky Mtn. Med. Conf., 3660 Baker Lane, Reno.

NOVEMBER

- Nov. 11 American Association of Public Health Physicians, Kansas City, Mo. Contact: Joseph M. Bistowish, M.D., Box 1568, Tallahassee, Fla.
- Nov. 11-15 American College of Preventive Medicine, Kansas City, Mo. Contact: R. E. Coker, Jr., M.D., Univ. of North Carolina, Chapel Hill.
- Nov. 11-15 American Public Health Association, Kansas City, Mo. Contact: Berwyn F. Mattison, M.D., 1790 Broadway, New York 19.

DECEMBER

- Dec. 1 5th National Conference on the Medical Aspects of Sports, Portland, Ore. Contact: AMA Health Education Dept., 535 N. Dearborn, Chicago 10.
- Dec. 1-4 American Medical Association clinical meeting, Portland, Ore. Contact: F. J. L. Blasingame, M.D., 535 N. Dearborn, Chicago 10.

POSTGRADUATE COURSES

- American College of Physicians postgraduate courses:
- Dec. 2-6 *Advances in the Medical Aspects of Cancer*, New York
- Dec. 2-6 *Psychiatry for the Internist*, Los Angeles
- Dec. 9-13 *Environmental Medicine*, Boston, Mass.
- Registration forms and requests for information on the above courses should be directed to: Edward C. Rosenow, Jr., M.D., Exec. Dir., The American College of Physicians, 4200 Pine Street, Philadelphia 4.
- University of Kansas School of Medicine postgraduate courses:
- Nov. 6 & 7 A. Morris Ginsberg Memorial Seminar: *Neurology*, Menorah Medical Center, Kansas City, Mo.
- Nov. 11-14 *Internal Medicine*.

For information on the above courses, contact The Department of Postgraduate Medical Education, University of Kansas School of Medicine, Rainbow Boulevard at 39th Street, Kansas City, Kansas.

- American College of Chest Physicians postgraduate courses:
- Nov. 11-15 *Recent Advances in the Diagnosis and Treatment of Diseases of the Heart and Lungs*, New York City
- Dec. 2-6 *Recent Advances in the Diagnosis and Treatment of Diseases of the Heart and Lungs*, Los Angeles

Contact Murray Kornfeld, American College of Chest Physicians, 112 E. Chestnut St., Chicago 11, for information and registration forms for the above courses.

KANSAS STATE DEPARTMENT OF HEALTH

TOPEKA, KANSAS

Division of Preventable Diseases—Division of Vital Statistics—Kansas Morbidity Incidence

Summary of Cases Reported in June 1963 and 1962

And cumulative totals for the first six months of 1963 and 1962

<i>Diseases</i>	<i>June</i>		<i>January to June Inclusive</i>			
	1963	1962	5-Year Median 1958-1962	1963	1962	5-Year Median 1958-1962
Amebiasis	2	3	2	74	30	30
Aseptic meningitis	—	—	*	—	4	*
Brucellosis	—	—	5	6	13	31
Cancer	330	496	416	2,018	1,959	2,204
Diphtheria	—	—	—	—	—	—
Encephalitis, infectious	1	4	1	4	10	11
Gonorrhea	228	200	200	1,398	1,107	1,107
Hepatitis, infectious	21	24	11	130	309	205
Meningitis, meningococcal	3	2	1	8	10	10
Pertussis	3	—	—	29	16	31
Poliomyelitis	—	—	1	—	—	1
Rheumatic fever	—	—	—	—	7	3
Salmonellosis	19	—	2	109	20	22
Scarlet fever	4	4	4	277	400	451
Shigellosis	—	3	3	18	11	14
Streptococcal infections	25	46	46	786	869	861
Syphilis	89	112	131	568	606	675
Tinea Capitis	2	5	5	42	74	74
Tuberculosis	31	27	27	151	141	163
Tularemia	—	—	2	6	6	7
Typhoid fever	—	—	—	—	—	2

* Statistics on 5-Year Median not available.

**ASEPTIC MENINGITIS DUE TO ECHO
AND COXSACKIE VIRUSES**

An unusually high incidence of ECHO and Coxsackie viral infections has been occurring throughout the State of Kansas during the past six weeks. In many instances, the disease is manifested as an aseptic meningitis or polio-like syndrome. Careful history has disclosed other secondary household cases of an enteroviral nature.

Typical cases of the ECHO virus aseptic meningitis have been characterized by severe frontal headache, fever of 101-104, nuchal rigidity, nausea, vomiting, and myalgia. In a few instances, changes in the deep tendon reflexes, muscle weakness, faint maculopapular rash, and pleurodynia have been noted. Most of the cases are occurring in children and young adults.

The State Public Health Laboratories has confirmed

through viral isolation studies these cases. Confirmed cases have occurred at Liberal, Wichita, Newton, Dodge City, Ellsworth, Salina, Topeka, Fort Scott, and Atchison. At Liberal approximately 100 cases are known to have occurred; all have recovered.

Since many of these cases do resemble non-paralytic polio, physicians are urged to submit specimens for viral studies in order to properly identify the etiology of these cases.

NEW MEMBERS

The JOURNAL takes this opportunity to welcome these new members into the Kansas Medical Society.

Jay H. Armstrong, M.D.
155 S. 18th Street
Kansas City 2, Kansas

Perry L. Rashleigh, M.D.
Smith Center
Kansas



C. ALEXANDER HELLWIG, M.D.

C. Alexander Hellwig, 74, Wichita, died on September 15, 1963, in a Wichita hospital.

Born August 23, 1889, at Meisen, Saxony, Germany, he had been a resident of Wichita since 1925. Dr. Hellwig received his medical degree at Bonn in 1916 and took additional training at other German universities. He served as pathologist at St. Francis Hospital in Wichita from 1925 to 1950. More recently he had been associated with the Hertzler Clinic in Halstead.

Dr. Hellwig is survived by his wife and two daughters.

OSCAR SHARP, M.D.

Oscar Sharp, retired physician, died at his home in Pittsburg on September 15, 1963. He was 80 years old.

Dr. Sharp was born October 6, 1882, near Pittsburg. He attended the College of Pittsburg and the University of Kansas Medical School, receiving his medical degree in 1922. He returned to Pittsburg and practiced there until his retirement.

He was a member of the Baptist church, various medical organizations and the Pittsburg Lodge, A.F. & A.M.

Survivors include one son and two daughters.

GEORGE M. WOODEN, M.D.

George M. Wooden, retired physician and banker of Argonia, died in an Anthony hospital on August 23, 1963, at the age of 92.

Although Dr. Wooden was born in Clark County, Missouri, on October 30, 1870, he had lived for many years in the Bluff City and Argonia communities.

He attended the College of Physicians and Surgeons in Keokuk, Iowa, and received his degree in medicine from that school in 1897. He began his practice in Kansas in 1906.

A son and several grandchildren survive Dr. Wooden.

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American College of Physicians Issue

The November issue of the JOURNAL is devoted entirely to the papers presented at the Regional Meeting of the American College of Physicians on February 22, 1963, in Wichita.

The program chairman for the meeting was Dr. Ernest W. Crow of Wichita, and he has likewise, by his persisting efforts, made possible the collection and presentation of these papers. For this the Editorial Board is deeply grateful.

This is the "second annual" such issue, and we believe represents a forward step in the improvement of the scientific content of the JOURNAL. The JOURNAL appreciates this opportunity to expand the audience for these interesting and instructive papers.



Serum Proteins

Changing Concepts in Protein Electrophoresis

LEO P. CAWLEY, M.D., *Wichita**

MIGRATION OF PROTEINS in an electrical field in a liquid media was first perfected by Tiselius. His technic is known as moving boundary electrophoresis and served for many years as the basis for classification of electrophoretic mobility of proteins. Classification was based on five fractions, albumin, α_1 globulin, α_2 globulin, Beta globulin and gamma globulin. The Tiselius method was quite complex and the equipment necessary for the performance of the analysis was expensive. Zone electrophoresis is a technic where a stabilizing medium is utilized to trap the migrated proteins such that they may be stained and examined at leisure after the electrophoretic phase. In the moving boundary technic there is no method to trap the proteins as they migrate. They must be monitored during the course of the study. Thus, zone electrophoresis, because it permitted examination at leisure and also because the equipment necessary was much less expensive became very popular. With the introduction of paper into electrophoresis as one of the first stabilizing media, zone electrophoresis took its place as one of the im-

portant analytical biochemical tools of our time. Zone electrophoresis in a sense became "of age." With this technic mixed population of protein molecules could be separated, identified and quantitated. The

An attempt has been made to outline some of the recent advances made in electrophoretic separation of serum proteins. Particular emphasis has been placed upon newer concepts, principally those utilizing stabilizing media such as agar-gel and cellulose acetate, and those methods using the molecular sieve principle, namely starch and disc electrophoresis.

support medium is theoretically inert and separation is based solely upon electrophoretic mobility. Agar-gel as a stabilizing medium has certain properties which make it somewhat more advantageous than paper. One of the most significant properties is the rapidity of the electrophoresis. This system is used widely in Europe and the United States for the separation of serum proteins, hemoglobins, lipoproteins and the isoenzyme complexes of lactic acid dehydrogenase (LDH).^{1, 2, 4, 16, 17, 21, 22, 23, 26} It has also found wide application in the field of immunodiffusion, principally immunoelectrophoresis.^{2, 5, 6, 7, 9, 10, 12, 18,}

* From the Wesley Medical Research Foundation, Inc., Wesley Medical Center, Wichita, Kansas. Doctor Cawley is Clinical Pathologist and Associate Director of Laboratories. Supported in part by Grants from Sedgwick County Heart Association, Kansas Division of American Cancer Society, National Multiple Sclerosis Society, and National Institutes of Health (A-4009-03 END). Presented at the Regional Meeting of the American College of Physicians, Wichita, February 22, 1963.

^{21, 24} Separation of proteins in agar-gel is rapid, more complete than paper and the medium is optically clear, which is a distinct advantage over other media, such as paper.^{4, 7, 9, 23} Cellulose acetate has certain properties which make it somewhat better than paper and it can be cleared which is optically advantageous.^{11, 14} It can also be utilized in immunoelectrophoretic analyses. Starch^{19, 20} and acrylamide gels^{8, 15} behave as molecular sieves and in combination with electrophoretic mobility unusual separation of proteins is possible. Here the separation is based not only upon the electrophoretic mobility but also on molecular size such that more protein molecules are separated by this system than is possible with paper, agar or cellulose acetate systems. The usual five or six bands that most of us are familiar with are increased by the sieving principle technics to about 25 bands.

Resolution and more complete understanding of serum protein patterns both from a genetic standpoint and from a pathologic standpoint have been made possible by the combination of electrophoresis and immunodiffusion known as immunoelectrophoretic analysis. This system was developed by Grabar and Williams.¹⁰ This technic consists of two stages. In the first the antigen is subjected to electrophoresis, usually in a medium of agar, although cellulose acetate has been used for this purpose. This is followed by a secondary phase of immunodiffusion in which the electrophoretic strip is removed from the chamber of electrophoresis, placed in a separate chamber and antisera placed in grooves made in the agar along a line parallel to the axis of the original electrophoresis. After a suitable period, usually 24 hours, diffusion of the antisera has proceeded far enough into the zone of electrophoresis to react with corresponding antigens. At the point of reaction a precipitin arc appears which can be further characterized by staining. Certain histochemical stains can also be utilized to further characterize these bands.^{9, 21}

Applications

Of the various methods of electrophoresis dealing with the stabilizing medium principle and the molecular sieve principle only two in each group will be considered, namely agar-gel electrophoresis and cellulose acetate electrophoresis representing stabilizing media types and disc electrophoresis and starch gel electrophoresis representing molecular sieve methods. Agar-gel immunoelectrophoresis will be discussed separately. Although paper still is an important stabilizing medium, it is gradually being replaced by, or at least supplemented with, stabilizing media which give more rapid separation of proteins and refinement of the finished product. Each of the media listed will be discussed with reference to applicability in the routine

diagnostic laboratory, immunoelectrophoretic applications, separation of lactic acid dehydrogenase (LDH) isoenzymes, hemoglobin separation, and use in study of genetic polymorphism, particularly of the transferrins and haptoglobins.

Stabilizing Media Electrophoresis

Agar-Gel Electrophoresis: Agar-gel electrophoresis is a very popular technic in Europe and the method of Weime utilizing agar coated microscopic slides is extensively used. In our laboratories we have developed a technic utilizing clear transparent 35 mm. Cronar strips as support for agar.⁴ The method is a simplified system which circumvents the need for wicks to connect the agar strip with the buffer tanks. This is accomplished because the Cronar strips, being pliable, may be inserted directly into the buffer tanks and, in fact, a Spinco-Durrum paper electrophoretic setup can be readily converted for agar-gel electrophoresis.

Agar-gel electrophoresis is well suited to the routine diagnostic laboratory and has been in use in our institution for two years. Separation is rapid and an electrophoretic run takes approximately 30 to 45 minutes. Thus it is possible to complete an electrophoretic study on a serum specimen on the same day the sample is drawn. The equipment normally used for paper for scanning can also be used for the agar strips and thus a complete study with scan and quantitation of the individual peaks is readily possible.

The agar system is very applicable to immunoelectrophoretic analysis and more will be covered in this area in a later section. Isoenzyme studies, particularly LDH, have become of diagnostic significance in recent years.^{3, 4, 13, 22, 25} Five bands have been described and these are readily discernible in agar. The identification of LDH isoenzymes is readily made applicable to the agar-gel system and we have utilized the agar-gel technic to fractionate and quantitate LDH isoenzymes as an aid in the diagnosis of myocardial infarction and liver disease.

Separation of hemoglobins is reasonably accurate in agar-gel and certainly superior to the old method of paper electrophoresis. Separation of the abnormal hemoglobin can be accomplished rapidly and with a number of different circumstances, such as pH change, identification of most of the hemoglobin variants is possible.

Study of genetic polymorphism with agar-gel electrophoresis is not practical since the method cannot separate the haptoglobins or transferrins adequately.

Cellulose Acetate Electrophoresis: This method is based on the work of Kohn who found that a thin sheet of cellulose acetate is capable of acting as a support media for electrophoresis. Separation is rapid and is accomplished within 90 minutes. The technic

also permits scanning either of the nontransparent cellulose acetate strips, or the strips may be cleared with proper solvents and made transparent and scanned. A micro adaptation using cellulose acetate has been developed by Graham and Grunbaum and permits separation of serum proteins within 15 minutes. In the latter technic eight specimens may be run simultaneously. The technic works well for serum proteins, the LDH isoenzymes and hemoglobins. Cellulose acetate is exceptionally good for separation of A₂ from A₁ hemoglobin. The method may also be used for immunoelectrophoresis. However, since the material is not transparent the precipitin bands must be brought out by special stains.

Cellulose acetate is not satisfactory for study of genetic polymorphism of transferrins and haptoglobins.

Molecular Sieve Methods

Disc Electrophoresis: This technic is based on a synthetic gel acrylamide, which can be polymerized by light to a degree desirable for separation of proteins. The polymerization results in control of pore openings within the gel such that migration of the proteins are not only separated by their electrical charge, but also by their size and configuration. The system known as disc electrophoresis is carried out in small slender glass tubes in approximately 30 to 45 minutes. The system can resolve about 25 protein bands in serum. The number of protein bands are so numerous that the system is not at the moment applicable to the routine diagnostic laboratory since satisfactory interpretation of the complex patterns is not yet possible. Furthermore it does not separate the gamma globulins adequately. *Figure 1* shows the general type of separation obtained with acrylamide gel. The order of migration is the same as for starch. The transferrin band and the multiple haptoglobin bands are easily identified. Gamma globulin travels as a broad zone from point of origin to the transferrin band and gives a hazy background to the gel. The greatest use of the technic at the moment is with special histochemical stains particularly for the study of enzymes including LDH isoenzymes. It operates with a very small quantity of protein and is excellent for separation of proteins in body fluids with low protein content such as spinal fluid, ovarian cyst fluid, organ extracts, etc. Hemoglobin separation appears to be relatively good but not necessarily better than cellulose acetate or agar-gel electrophoresis. One of the most important applications of the method is the study of genetic polymorphism particularly with reference to transferrins and haptoglobins. However, since most of the work in this latter field has been with starch gel a considerable period of time must



Figure 1. Disc electrophoretogram of normal human serum. The great number of proteins depicted is seen in this photograph. The haptoglobins are shown to consist of multiple bands as in starch; albumin, transferrin, post-albumin, pre-albumin, slow alpha₂ and other bands are easily identified.

elapse before correlation between the two systems is complete.

Immunoelectrophoresis utilizing primary separation by disc electrophoresis is a distinct possibility. In our laboratories we have performed a number of experiments combining disc electrophoresis and immunodiffusion immunoelectrophoretic technics in agar and the results are promising.

Starch Gel Electrophoresis: Starch gel electrophoresis is not suited for the routine diagnostic laboratory since it is technically quite difficult. There are two basic methods, horizontal and vertical. Starch gel is made into a block and the sample inserted in a slot

in the gel. Electrophoresis proceeds for about 18 hours and several layers are cut from the block, one layer is usually stained for protein and the others are stained for specific components of serum. The method has been extensively employed in investigation of serum proteins, enzymes and hemoglobins. Of all

of the systems discussed starch gel still remains the one which probably has the most latitude in resolving various protein fractions. In addition to its widespread use for the study of transferrins and haptoglobins, it has also been employed to show heterogeneity in gamma globulins. This is a relatively recent observation and applies principally to paraproteins found in myeloma.² The system also serves as possibly the basic standard for separation and characterization of LDH isoenzymes.^{13, 25} It also is a favorite medium of many investigators for characterization of hemoglobin.

Immunoelectrophoresis

Immunoelectrophoretic Analysis: This technic, as mentioned above, is an extension into an additional dimension of analysis of proteins. The precipitin bands may be characterized by special enzyme stains. The immunoelectrophoretic principles may be applied not only in agar-gel but also with cellulose acetate, disc electrophoresis, and it has also been applied to starch.

Agar-gel probably serves as the standard medium for the primary electrophoretic separation of antigen with trenches for antiserum cut parallel to the axis of electrophoretic migration. Diffusion of antisera results in exceptionally good precipitin bands. *Figure 3* shows the extensive number of bands depicted by immunoelectrophoresis. The usefulness of this procedure in the diagnostic laboratory will be covered in the discussion.

Discussion

At this time it appears that in any particular investigative study all methods discussed have a place. Certainly a combination of a stabilizing medium method (agar-gel, paper, cellulose acetate) with a molecular sieve system (starch or disc) is often required to obtain the best results. It is of interest to note that all of these technics were until very recently limited to the research departments of universities and hospitals. Today the speed with which such research technics find their way into the diagnostic laboratory is surprisingly rapid. It therefore behooves the physician to become familiar with the added advantages that they can expect from these new tools.

Probably one of the most outstanding applications of serum protein electrophoresis is in the study of paraproteins (abnormal serum proteins). There has been a continuing interest in the protein pattern present in serum in myeloma, hypergammaglobulinemia, macroglobulinemia and agammaglobulinemia. Here-¹²mans has recently designated the group of proteins traveling electrophoretically in the Beta₂-gamma zone as immunoglobulins because they share physical,

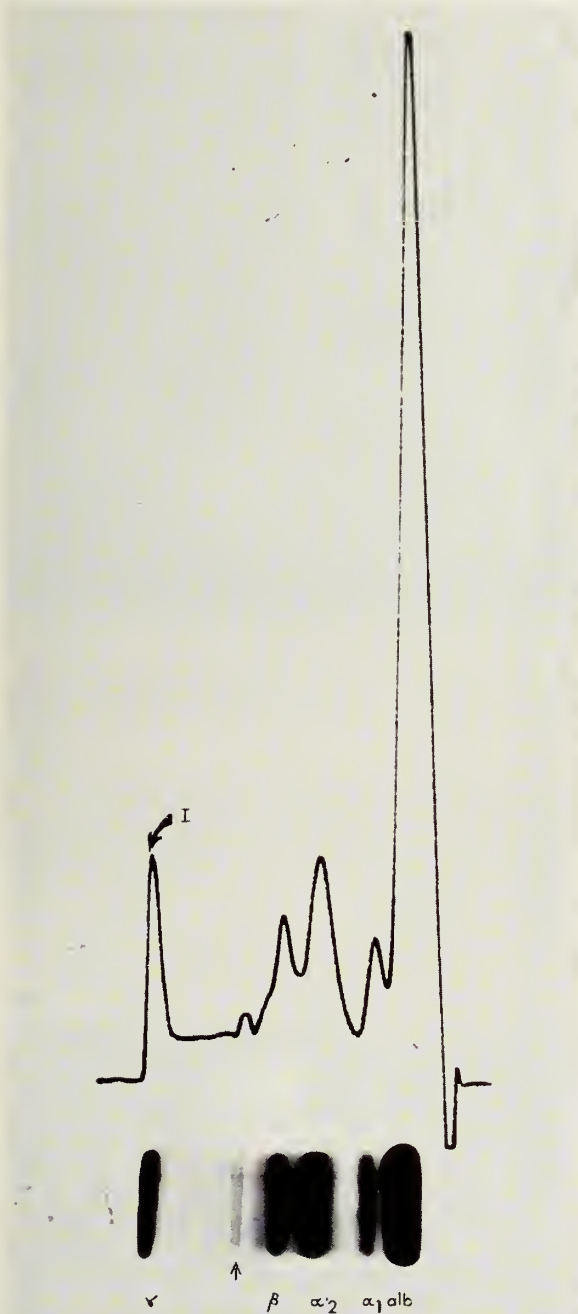


Figure 2. Electrophoretogram with scan of serum with abnormal protein (paraprotein). The abnormal peak (I), is very narrow and located in the post gamma zone.

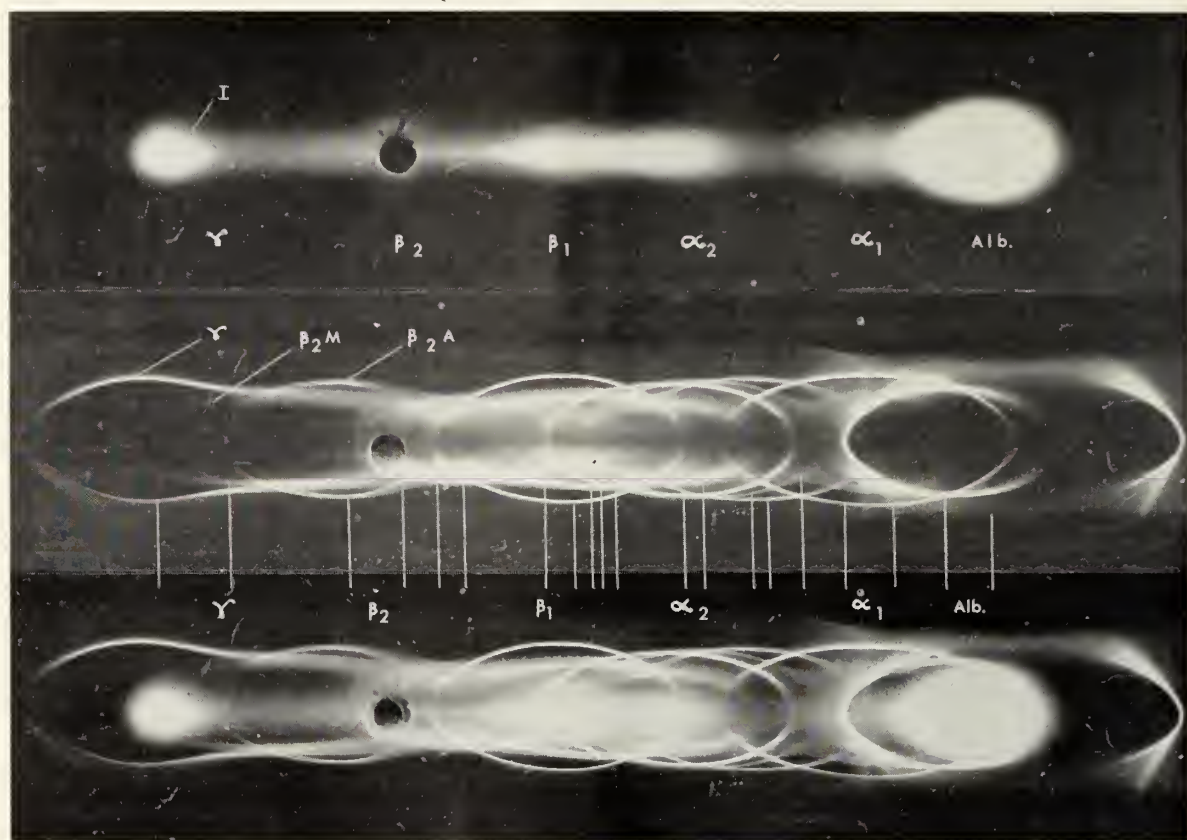


Figure 3. Immunoelectrophoretic study of serum in Figure 2 is shown in three photographs. Upper: the proteins as they appear before antisera is added note abnormal peak (I). Middle is the immunoelectrophoretogram. The gamma (γ) band shows a bulge which as noted in the lower photograph corresponds with the abnormal peak (I) in Figure 2 and Figure 3, upper.

chemical and immunological properties. More important, they share the ability to carry antibodies. These immunoglobulins have been designated as gamma globulin (7S), Beta₂A globulin (7S), and Beta₂M macroglobulins (19S). Immunoglobulins are present in normal serum though not discernible by the usual technic of electrophoresis and are brought to light only by immunoelectrophoresis.^{2, 12} However in an electrophoretic study of a myeloma protein it is of some interest to note that the abnormal protein usually involves one of the immunoglobulins and thus it is now possible to classify myelomas into at least two classes, gamma type and Beta₂A type.^{2, 9, 12} Macroglobulinemia of Waldenström is easily separated from myeloma by immunoelectrophoresis. It is no longer necessary to depend upon the ultracentrifuge for this differential diagnosis. This is possible because abnormal immunoglobulin in this disease involves the Beta₂M immunoglobulin.^{2, 9, 12} The precipitin bands formed in immunoelectrophoresis are relatively characteristic of the immunoglobulins. Distortion of these usual precipitin bands is an accurate way of identifying the abnormal peaks usually

found in myeloma serum. An example of the application of this principle is shown in Figures 2 and 3. Figure 2 is an agar-gel electrophoretogram of serum from a patient with abnormal proteins. Note the sharp peak in the post gamma zone marked "I." The question is what type of abnormal immunoglobulin is present in such excess? Is this a gamma type or a Beta₂A type, or is it possible that this is a Beta₂M macroglobulin peak? In Figure 3 is an immunoelectrophoretic study of the serum, the upper portion of the Figure contains the pattern of the protein as it would appear after electrophoresis and before application of antisera. This is stained as a reference. The middle photograph is the immunoelectrophoretogram that shows the precipitin bands formed between the separated proteins and horse anti-human serum (Pasteur). The important immunoglobulin bands have been designated in the photograph. You will note that there is a bulge in the gamma band which as noted in the lower photograph corresponds with the abnormal peak (I). This serves to identify the abnormal narrow gradient peak (I) observed in Figure 2 as a gamma type myeloma protein corresponding

to the gamma immunoglobulin. The horse anti-human serum in this particular study described 20 separate bands or antigens in this particular serum. As can be seen there is considerable overlap of antigens as depicted by immunoelectrophoresis within the 6 different conventional protein fractions of the agar-gel electrophoretic pattern.

Recording of the information from immunoelectrophoresis is of paramount importance. In *Figure 4* two methods are shown. Our usual practice is to utilize the electrophoretogram strips as negatives in a photographic enlarger since they are transparent. This permits photographs such as those in *Figure 2* to be made. Enlargement is possible for greater detail. However, for quick reporting contact prints as in *Figure 4* (left) are satisfactory. *Figure 4* (right) is a Xerox 914 copy of the same pattern made from the stained strips and shows the capability of the Xerox 914 in accurately reduplicating the pattern. This latter method is used for quick reporting but not for detailed work.

One of the important features of the rapid system of electrophoresis in use in our laboratory is screening or monitoring of patient protein patterns. This monitoring concept is exemplified in the case of the patient represented in *Figures 2, 3* and *4*. The electrophoretic pattern was an incidental finding and myeloma was subsequently proved and treatment started. In some instances we have followed patients for 12 to 18 months before the appearance of clinical signs or other laboratory evidence such as anemia or x-ray lesions of myeloma have become apparent. We have set up a system whereby the serum proteins are monitored daily and any abnormal protein pattern is subjected to immunoelectrophoresis, records filed, and a careful check kept on the patient's progress. By such an approach we hope to show that with the refinements in the improved technics of electrophoresis and immunoelectrophoresis of today we may be capable of detecting disturbances involving proteins in the preclinical stage of the disease.

The use of electrophoretic systems for the detection of abnormalities in hemoglobin is well accepted. The recent introduction of the concept of isoenzymes, particularly of LDH, represents a new area from which we can expect continuing information. One of the most outstanding uses of LDH isoenzymes at the moment is identification of LDH band No. 5 (European classification anode to cathode LDH bands are designated 1, 2, 3, 4, and 5) which travels electrophoretically in the zone of gamma globulin and originates almost exclusively from liver tissue. In contrast, bands 1 and 2 arise principally from muscle (including myocardium) but are also found in all tissues including liver. Other enzymes have now been found to exist in multiple molecular forms (isoenzymes) and we can expect to see exciting developments in these areas.²⁵

Characterization of genetic polymorphisms probably still remains an investigative tool. This area of investigation should be of interest to physicians since, like blood groups, certain proteins are inherited on a genetic basis and are not necessarily related to disease but constitute another parameter in the genetic make-up of man. Paternity testing is beginning to include electrophoretic and immunoelectrophoretic analysis in the never ending struggle to develop a serologic fingerprint.

Summary

An attempt has been made to outline some of the recent advances made in electrophoretic separation of serum proteins. Particular emphasis has been placed upon newer concepts, principally those utilizing stabilizing media such as agar-gel and cellulose acetate, and those methods using the molecular sieve principle, namely starch and disc electrophoresis. Each of the methods has its prominent features. Of those applicable for routine clinical diagnostic laboratories agar-gel and cellulose acetate are the methods of choice. With these methods it is possible to characterize some of the most important features of abnormal

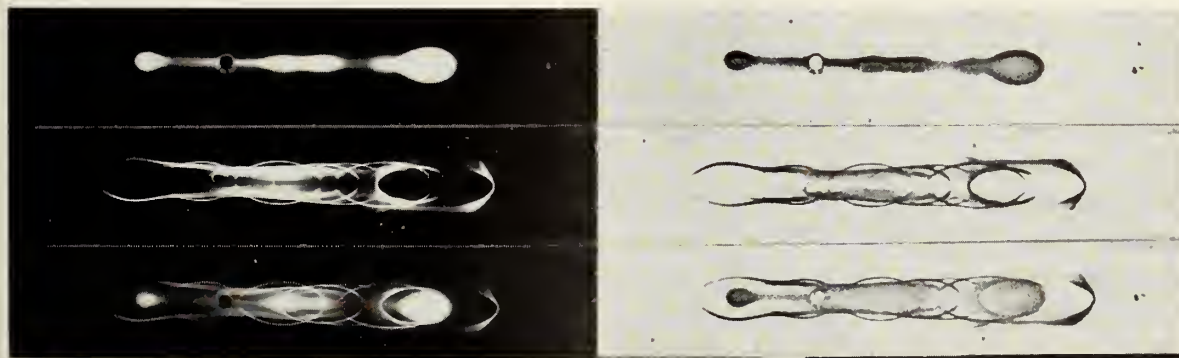


Figure 4. Technic of recording immunoelectrophoretograms. Left, contact prints. Right, Xerox 914 copy of stained strips. Note the accurate reproduction of the patterns.

protein production such as multiple myeloma, macroglobulinemia, hypogammaglobulinemia and hypergammaglobulinemia. It is now possible with immunoelectrophoretic analysis to classify myeloma protein into gamma and Beta₂A types. It is also possible to distinguish macroglobulinemia of Waldenström from myeloma without the aid of an ultracentrifuge. Immunoelectrophoresis is now the method of choice for the diagnosis of macroglobulinemia of Waldenström. Adequate separation of hemoglobins and LDH isoenzymes for diagnosis can be achieved with agar-gel and cellulose acetate. Molecular sieve technics can be expected to find their way into the diagnostic laboratories within a very short period of time, and already are being used in paternity testing, hemoglobin separation, immunoelectrophoresis, and study of paraproteins.

One of the yet incompletely studied areas is isoenzyme complexes. Most physicians are familiar with LDH isoenzymes, but other isoenzymes are currently being investigated and the protein profile of individual organs is under way in many laboratories. A study, therefore, of organ individuality may eventually aid in understanding the influence that injured organs have on plasma enzymes.

References

1. Bachman, R., and Laurell, C. B.: Electrophoretic and immunologic classification of M-components in serum. *Scand. J. Clin. Lab. & Invest.* 15:11-24, 1963.
2. Berlin, N. E., Merwin, R., Potter, M., Fahey, J. L., Carbone, P. P., and Cline, M. J.: Neoplastic plasma cell. Combined Clinical Staff Conference at the National Institutes of Health. *Ann. Int. Med.* 58:1017-1036, 1963.
3. Blanchaer, M. C.: Electrophoresis of serum lactic dehydrogenase. *Clin. Chim. Acta* 6:272-275, 1961.
4. Cawley, L. P., and Eberhardt, L.: Simplified gel electrophoresis. I. Rapid technic applicable to the clinical laboratory. *Am. J. Clin. Path.* 38:539-547, 1962.
5. Cawley, L. P., and Eberhardt, L.: Simplified gel electrophoresis. II. Immunoelectrophoretic applications. *Am. J. Clin. Path.* In Press.
6. Cawley, L. P., Eberhardt, L., and Wiley, J. L.: Double immunodiffusions with agar-coated plastic film base. *Am. J. Clin. Path.* In Press.
7. Crowle, A. L.: Immunodiffusion. Academic Press, 1961, New York and London.
8. Davis, B. J., and Ornstein, L.: A new high resolution electrophoresis method. Delivered at the Society for the Study of Blood, March 24, 1959, at the New York Academy of Medicine.
9. Dimopoulos, G. T. (Conference Ed.): Plasma proteins in health and disease. *Ann. New York Acad. Sc.* 94:1-336, 1961.
10. Grabar, P., and Williams, C. A., Jr.: Methode permettant l'étude conjuguée des propriétés électrophorétiques et immunochimiques d'un mélange des protéines. Application au serum sanguin. *Biochim. et biophys. acta* 10:193-194, 1953.
11. Graham, J. L., and Grunbaum, B. W.: A rapid method for microelectrophoresis and quantitation of hemoglobins on cellulose acetate. *Am. J. Clin. Path.* 37:567-578, 1963.
12. Heremans, J. F.: Immunochemical studies on protein pathology. The immunoglobulin concept. *Clin. Chim. Acta* 4:639-646, 1959.
13. Hunter, R. L., and Markert, C. L.: Histochemical demonstration of enzymes separated by zone electrophoresis in starch gels. *Science* 125:1294-1295, 1957.
14. Kohn, J.: Small-scale membrane filter electrophoresis and immunoelectrophoresis. *Clin. Chim. Acta* 3:450-454, 1958.
15. Raymond, S., and Wang, Y. J.: Preparation and properties of acrylamide gel for use in electrophoresis. *Anal. Biochem.* 1:391-396, 1960.
16. Ressler, N., and Moy, T.: Simplified fluid film method of electrophoresis. *Clin. Chim. Acta* 4:901-904, 1959.
17. Robinson, A. R., Robson, M., Harrison, A. P., and Zuelzer, W. W.: A new technique for differentiation of hemoglobin. *J. Lab. & Clin. Med.* 50:745-752, 1957.
18. Scheidegger, J. J.: Une micro-méthode de l'immuno-electrophorese. *Int. Arch. Allergy* 7:103-110, 1955.
19. Smithies, O.: Zone electrophoresis in starch gels: Group variations in the serum proteins of normal human adults. *Biochem. J.* 61:629-641, 1955.
20. Smithies, O.: An improved procedure for starch-gel electrophoresis. Further variations in the serum proteins of normal individuals. *Biochem. J.* 71:585-587, 1959.
21. Uriel, J., and Grabar, P.: Etude des lipoprotéines sériques par électrophorèse en gelose et l'analyse immuno-electrophoretique. *Bull. Soc. Chim. Biol.* 38:1253-1269, 1956.
22. Van der Helm, H. J.: A simplified method of demonstrating lactic dehydrogenase isoenzymes in serum. *Clin. Chim. Acta* 7:124-128, 1962.
23. Wieme, R. J.: Über einige Aspekte der Electrophorese im Agar Gel. *Behringwerk Mitteilungen.* 34:27-37, 1957.
24. Williams, C. A., Jr., and Grabar, P.: Immunoelectrophoretic studies on serum proteins. I. The antigens of human serum. *J. Immuno.* 74:158-168, 1955.
25. Wroblewski, F. (Conference Ed.): Multiple molecular forms of enzymes. *Ann. New York Acad. Sc.* 94:655-1039, 1961.
26. Zak, B., and Sun, K. M.: Technic for separation of protein by means of agar-gel electrophoresis. *Am. J. Clin. Path.* 29:69-79, 1958.

ESSAY CONTEST

The American College of Chest Physicians offers three cash awards to be given annually for the best essay prepared by undergraduate medical students on any phase of the diagnosis and/or treatment of chest diseases (heart or lungs). The contest closes March 15, 1964.

The First Prize will be \$500; Second Prize, \$300 and Third Prize, \$200. Each winner will also receive a certificate of merit. A trophy inscribed with the name of the winner and the name of his school will be presented to the winner's school. Since these Essay Contests were initiated in 1950, cash prizes totaling more than \$11,000 have been awarded to students in many parts of the world.

The winners will be announced at the 30th Annual Meeting of the American College of Chest Physicians, to be held in San Francisco, June 18-22, 1964.

The official application form, sample copies of the journal, and additional information may be secured by writing Mr. Murray Kornfeld, Executive Director, American College of Chest Physicians, 112 East Chestnut Street, Chicago, Illinois 60611.

Lymphoma

A Geographical Study of Leukemia and Lymphoma in Kansas, 1950-1959

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and ALAN ROTH, M.D., *Kansas City, Kansas**

Introduction

A BRIEF STUDY OF *Vital Statistics of the United States* reveals a rise in leukemia-lymphoma death rates from 3.3 deaths per 100,000 in 1930 to 14 deaths per 100,000 in 1959. There are at least three factors which make this increase more apparent than real. First, there have been changes in the reporting and classification system used by the United States Public Health Service. Second, there is a constant increase in older age groups where this disease is most common. Finally, improved facilities are available for the diagnosis of these diseases. However, most observers^{6, 10, 13, 17, 20, 21} concede that an actual increase in death rate for these neoplasms has occurred.

At the University of Kansas Medical Center we have been impressed with the number of leukemia patients referred to this hospital from certain areas in Kansas. Of course, the most likely explanation for this is a coincidental choice of a consulted hematologist among the referring physicians of a given area. There are two other factors, however, which aroused an interest sufficient to promote this epidemiological study of leukemia. The first was the occurrence of multiple cases of leukemia in a family. There have been 12 such families during the past six years observed at this Medical Center. The other factor was the intriguing reports^{7, 9, 12} of localized "leukemia epidemics."

The purpose of this study is to delineate regions of

increased leukemia and lymphoma death rates; and to determine the relationship of urbanization, population density, and age composition of the population to the increase in the leukemia-lymphoma death rate.

A ten year study of leukemia and related neoplasms in Kansas was carried out utilizing 2,740 cases. The following observations are made:

—there is some grouping of counties with high incidence, but not sufficiently to make an obvious explanation for the localization,

—the proportion of the population in older age groups is an important factor in explaining the variation in death rates among counties and regions,

—the death rate for leukemia *et al.* is significantly higher in urban areas than in rural areas,

—the highest death rate is in small towns (2,500-5,000) and the death rate declines as the population of the urban areas increases,

—and finally, that with *age adjustment* the death rates of leukemia and lymphoma in small towns approximate those in the cities with larger population.

* From the Department of Microbiology and Medicine, University of Kansas Medical Center, and the Communicable Disease Center, Public Health Service, U. S. Department of Health, Education, and Welfare, Kansas City, Kansas. Supported, in part, by grants from Wyandotte County Cancer Society, the Harold English Foundation and a N.I.H. training grant in microbiology.

Dr. Martin, Post-doctoral Fellow in Microbiology; Dr. Werder, Professor and Chairman, Department of Microbiology, and Dr. Larsen, Assistant Professor, Department of Internal Medicine, are from the University of Kansas Medical Center. Dr. Chin is chief of the Respiratory and Enteric Virus Unit, Communicable Disease Center, and an associate professor of the Department of Microbiology at the Medical Center. Dr. Roth, a former student at the Medical Center, is now a Resident in Pathology at the Wesley Hospital, Wichita.

Presented at the Regional Meeting of the American College of Physicians, Wichita, February 22, 1963.

Methods

Individual death certificates of Kansas for the ten year period, 1950 through 1959, were examined. Any of the certificates listing the lympho-hematopoietic neoplasms as the primary, secondary, or contributing cause of death were photocopied. The following entities were considered to be a part of these lympho-hematopoietic neoplasms:

Lymphoma

Lymphatic Lymphoma

Giant Follicular Lymphoma

Malignant Undifferentiated Lymphoma
 Reticulum Cell Lymphoma
Hodgkins
 Hodgkin's Lymphoma
Multiple Myeloma
 Multiple Myeloma
Lymphatic Leukemia
 Chronic Lymphatic Leukemia
Myelogenous Leukemia
 Chronic Myelogenous Leukemia
Acute Leukemia
 Acute Lymphatic Leukemia
 Acute Myelogenous Leukemia
 Acute Monocytic Leukemia
 Acute Undifferentiated Leukemia
 Aleukemic Leukemia
 Acute Leukemia (type unspecified)
Other Leukemia
 Leukemia (type unspecified)

For use in the study the lympho-hematopoietic diseases are divided into the seven categories shown in the listing. Although somewhat arbitrary, grouping is absolutely necessary—both for significant numbers, and for comparison with figures from *Vital Statistics of the United States*. Though some differences are evident in the early years of the study for myelogenous, lymphatic, and acute leukemias, by 1959 these differences are largely reconciled (Table 1). A total of 2,740 death certificates of patients with lympho-hematopoietic neoplasms were photocopied for this study. An IBM card was prepared from each certificate showing the name, age, sex, race, marital status, disease, place of death, place of usual residence, date of death, length of illness and all other information which might be of future use. Programming of this material through the IBM 650 Computer at the University of Kansas resulted in a record of the number of deaths from each disease for every county for

each of the ten years. The probabilities (p value) for deaths equal to those observed were calculated from the Poisson distribution, using the yearly United States death rates of each disease as the parameter of this distribution. Other statistics used in this study were obtained from map plots of the deaths and use of an IBM card sorting machine.

Results

Comparison of the Kansas and United States death rates is shown graphically for five selected years in Figure 1. The selected years are representative for the ten year period. There is no significant difference though the Kansas death rates average slightly higher than those for the United States. The differences in

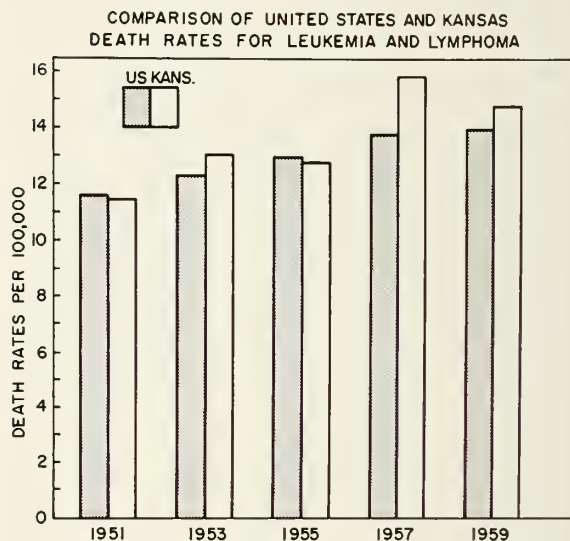


Figure 1

TABLE 1
DEATH RATES OF LEUKEMIA AND LYMPHOMA
IN KANSAS AND UNITED STATES FOR FIVE SELECTED YEARS
(RATE/100,000)

	1951		1953		1955		1957		1959	
	K	US	K	US	K	US	K	US	K	US
Lymphoma	2.2	2.8	3.1	3.3	3.3	3.6	4.3	3.7	4.0	3.7
Hodgkins	1.3	1.7	1.3	1.8	1.5	1.8	1.8	1.8	1.9	1.7
Multiple Myeloma	0.8	0.9	1.0	1.1	1.1	1.3	1.5	1.5	1.9	1.6
Lymphocytic Leukemia	2.8	2.5	2.0	2.5	2.0	2.7	1.9	2.7	2.1	1.7
Myelogenous Leukemia	1.0	2.0	1.5	1.9	0.8	2.1	1.3	2.1	1.0	1.2
Acute Leukemias	3.0	0.8	3.8	1.0	3.6	1.1	4.3	1.3	3.9	3.4
Other Leukemias	0.4	0.8	0.4	0.8	0.5	0.7	0.8	0.7	0.1	0.7
Total	11.5	11.6	13.1	12.4	12.8	13.0	15.9	13.8	14.9	14.0

lymphatic, myelogenous, and acute leukemias during the early years of the study are explained in the section on methods. When all leukemias are considered together, the differences are insignificant. This minor variation in grouping, plus the unreported cases found by a personal search of death certificates make the statistics used in this study differ slightly from those available in *Vital Statistics of the United States*.

The age specific death rates for all lympho-hematopoietic neoplasms, all leukemias, and lymphoma are compared for Kansas and the United States in Figure 2. There is no appreciable difference between the

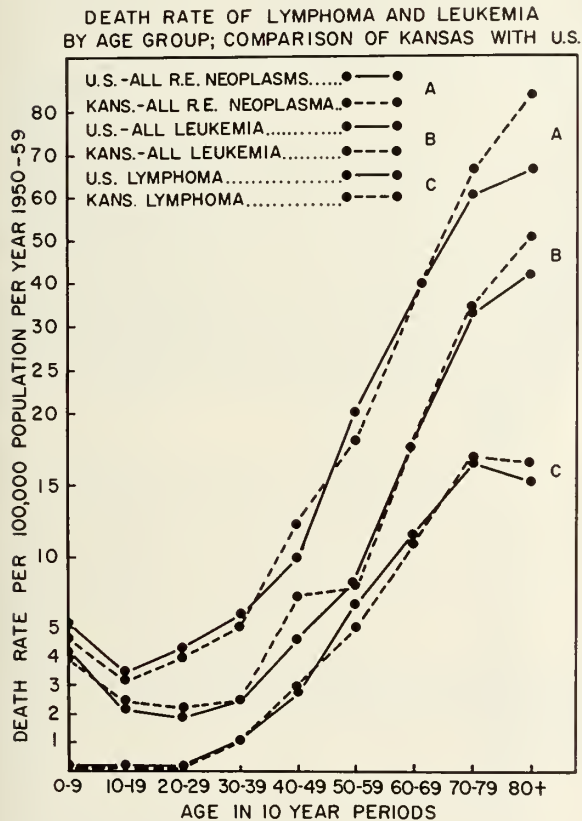


Figure 2

Kansas and United States rates. Although figures for Hodgkins, myeloma, and individual leukemias are not shown graphically, they all have a similar pattern and relationship. After 40 years of age, the death rate of these diseases increases abruptly. This fact assumes major significance in later discussion of geographic variations in incidence.

Figure 3 shows the death rates of all lympho-hematopoietic neoplasms by county, using the United States rate for comparison. The majority of the counties have rates similar to that of the United States. In 21 counties, however, the rates were one and one-half to two times higher than the United States average. It

is noteworthy that none of the metropolitan areas (Sedgwick, Shawnee, Wyandotte, and Johnson) are included in the high rate counties. There is some grouping of the counties with high death rates, but the grouping is not concentrated enough to be considered significant.

In order to obtain larger population and case figures with which to work, the state is divided into nine geographical areas, as shown in Figure 4. The regions are divided purely on the basis of convenience, although many counties in a region have similar geographic and population characteristics. In Figure 4, the top number represents the population (average of 1950 and 1960 census), the second number is the death rate of lympho-hematopoietic neoplasms, and the third number is the percentage of the population 65 years of age and older. There are considerable variations in the death rates, ranging from 11.0 per 100,000 in the west central region (No. 2) to 15.7 per 100,000 in the southeast region (No. 9). It is again noteworthy that regions with the highest death rates include no metropolitan areas. The lowest death rates, however, occurred in regions that are most rural in character. As illustrated in Figure 2, the proportion of the population in older age groups could be an important factor in explaining the regional difference in death rates. This relationship can be seen in Figure 5 which suggests a correlation between death rates and the percentage of the population over 65 years of age.

Since previous studies^{11, 13, 15} have raised the possibility of a relationship between urbanization and incidence of leukemia, this aspect was carefully evaluated. The Bureau of the Census²² defines urban as any town of 2,500 population or more as well as metropolitan areas. The death rates of lympho-hematopoietic neoplasms are significantly greater in urban than in rural areas as shown in Table 2. The death rate for each individual disease is also higher in urban areas.

Table 3 shows the death rates of lympho-hematopoietic neoplasms by different size of towns. The lowest rates are in rural areas, and the highest rates are in towns with population between 2,500 and 4,900. The death rate then declines with increasing population size. This pattern is consistent even when each region is analyzed separately.

In an effort to explain this pattern, the first consideration was again to determine the percentage of the older age groups in the population studied. As shown in Table 4, it is evident that the small towns have the highest percentage of older individuals and that the percentage dwindles as the town population increases. In the last column of Table 4, the death rates are adjusted to age using the 1960 U. S. population as standard. The data suggests that the high

GEOGRAPHIC DISTRIBUTION OF LYMPHOMA AND LEUKEMIA
IN KANSAS; COMPARISON WITH U.S.

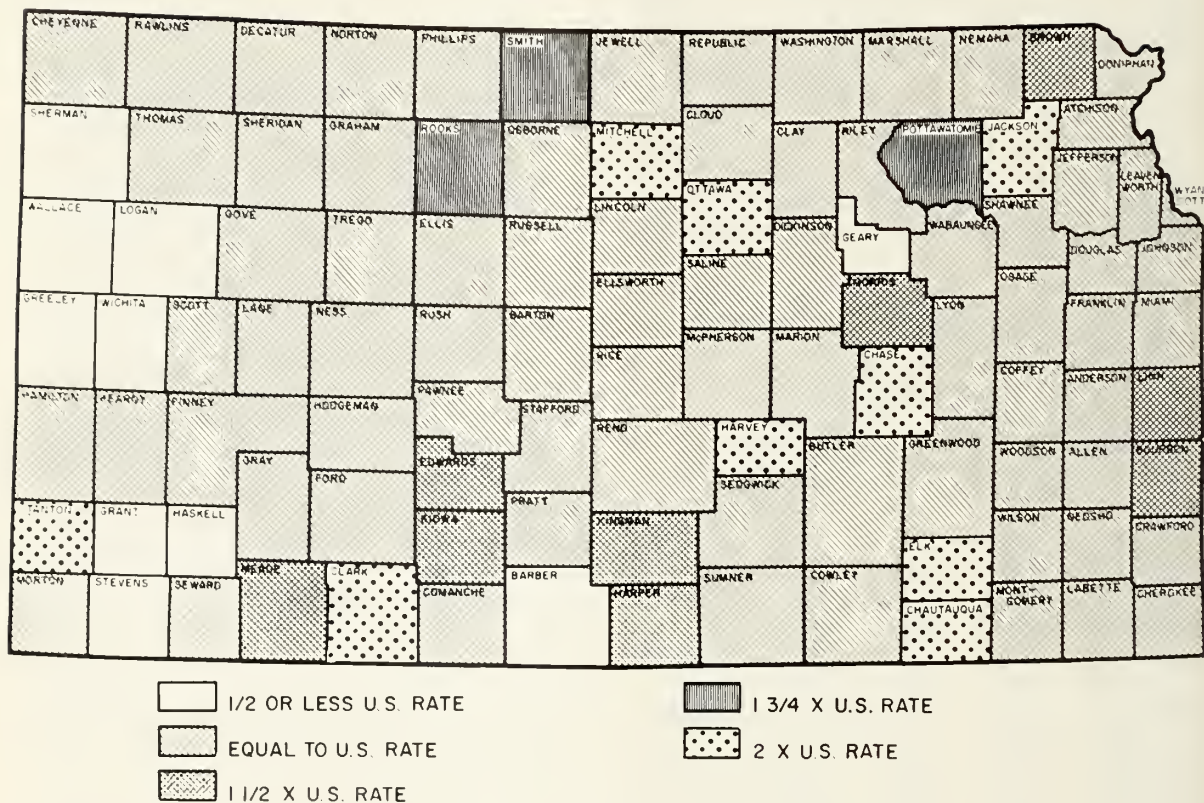


Figure 3

TABLE 2
URBAN-RURAL COMPARISON
OF DEATH RATES OF LEUKEMIA AND LYMPHOMA
KANSAS 1950-1959

Population	State 2,049,700		Urban 1,100,200		Rural 949,500	
	NO. OF CASES	RATE PER 100,000	NO. OF CASES	RATE PER 100,000	NO. OF CASES	RATE PER 100,000
TOTAL	2,740	13.4	1,786	16.2	954	10.0
Lymphoma	695	3.4	448	4.1	247	2.6
Hodgkins	324	1.6	208	1.9	116	1.2
Multiple Myeloma	247	1.2	166	1.5	81	0.8
Lymphocytic Leukemia	454	2.2	266	2.4	188	2.0
Myelogenous Leukemia	278	1.4	187	1.7	91	1.0
Acute Leukemia	742	3.6	511	4.6	231	2.4

Population figures are averages of 1950 and 1960 Bureau of Census numbers.

TABLE 3

DEATH RATES OF LEUKEMIA AND
LYMPHOMA ACCORDING TO POPULATION
SIZE OF TOWNS
KANSAS 1950-1959

Population	Total Population	No. of Cases	Rate per 100,000
Rural- 2,500	949,500	954	10.0
2,500- 4,900	110,200	229	20.7
5,000- 9,900	153,000	263	17.2
10,000-49,900	315,000	514	16.4
50,000-over	521,000	780	15.0

Population figures are averages of 1950 and 1960 Bureau of Census numbers.

rates in smaller towns are related to high proportion of older persons in the population.

Discussion

In basing a geographical study of leukemia on death certificates, we are well aware of the extensive reports^{1,2} on their poor reliability. The invariably fatal outcome of the reticuloendothelial neoplasms

TABLE 4

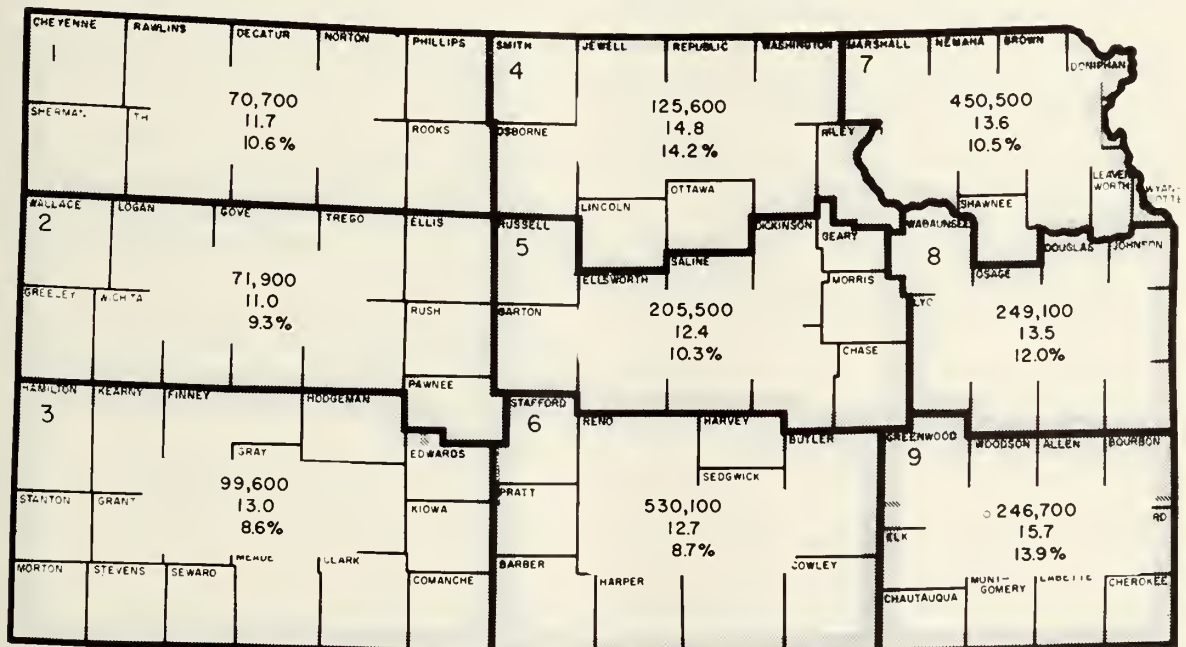
AGE ADJUSTED DEATH RATE FOR
DIFFERENT SIZED CITIES
KANSAS 1950-1959

Population	Death Rate per 100,000	Percentage of Population >65 Yr.	Age Adjusted Death Rate*
Rural- 2,500	10.0	12%	9.0
2,500- 4,900	20.7	17%	14.9
5,000- 9,900	17.2	13%	14.7
10,000-49,900	16.4	12%	17.2
50,000-over	15.0	9%	15.1

* Rates are number of deaths per 100,000 standardized to the age distribution of the 1960 U. S. population.

should make the death rate the same as the case incidence. Bailar *et al.*,¹ however, points out several factors which make this assumption untrue. In spite of the fatality of the disease the incidence of new cases is always higher than the death rate. All too frequently there is a large difference between the actual cause of death and the one listed on the death cer-

REGIONAL LEUKEMIA LYMPHOMA DEATH RATE



TOP FIGURE: POPULATION OF REGION

MIDDLE FIGURE: LEUKEMIA-LYMPHOMA DEATH RATE / 100,000

BOTTOM FIGURE: PERCENTAGE OF REGIONAL POPULATION OVER 65 YEARS OF AGE

Figure 4

tificate. Barclay and Phillips² published an excellent study of death certificate accuracy in malignancies. This seven year study shows the diagnosis is unsubstantiated in 7.5 per cent of deaths attributed to lymphatic and hematopoietic neoplasms. An additional 1.8 per cent of deaths due to these neoplasms were not recorded in the death certificates. Therefore, an error of 6 to 10 per cent can be expected in using death certificates for this study. There is no other source available for the study of large numbers of cases.

A number of geographical surveys have been done on the occurrence of leukemia and cancer.^{3-19, 21, 23} All of these studies have shown a moderate to marked difference in the leukemia death rates for various areas. In the United States the rates vary as much as 30 per cent between the southeast and the north-central states.⁶ The Kansas study shows a 40 per cent difference between high and low regions. Several factors have been proposed as being related to the difference. The very low incidence of leukemia in non-white groups explains some of the variations between states, but is not applicable to the Kansas study since the low death rate regions have less than 1 per cent non-white population. Background radiation was studied by Court Brown, *et al.*⁴ and they found no relationship between high radiation rate and high leukemia death rates. Economic status was examined as a correlating factor. Pinkel and Nefzger found a striking relationship between leukemia in childhood and upper economic levels,¹⁹ but no correlation in adult leukemia.¹⁸ Lack of correlation between incidence of leukemia and economic factors was reported by Patno.¹⁶ In our study, although the two regions in Kansas with the lowest median income also have the highest death rates, there is no demonstrable trend when the other regions are considered.

Increase in the proportion of the older age groups has often been implicated as a reason for the increase in death rates for the lympho-hematopoietic neoplasms. *Figure 5* and *Table 4* show that this factor is also largely responsible for much of the regional variations in death rates. It is not the only factor, but it is clearly a large one.

Meadors¹⁷ has advocated population density as having a relationship to high incidence. More recent studies^{6, 13, 16, 18, 19} have discounted this, since comparison of metropolitan and non-metropolitan counties show no significant difference in death rates. However, these comparisons made no allowance for age adjustment of the two populations. The age adjusted rates for rural and various sized towns in *Table 4* demonstrate the significant difference between urban and rural populations, but no appreciable difference between towns and cities of varying sizes.

There are several small towns with populations of

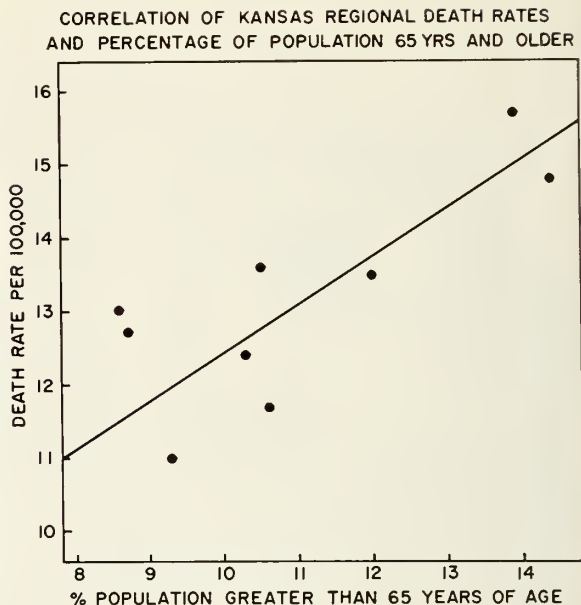


Figure 5

3,000 to 7,000 which have an average or low proportion older age group and a very high death rate. Local investigation of these areas will be made.

References

1. Bailar, C., Honeyman, S., and Eisenberg, H.: Incidence and Mortality Rates for Leukemia and Lymphoma, *Pub. Health Rep.*, 77(4):281-286, Apr., 1962.
2. Barclay, T. H., and Phillips, A. J.: The Accuracy of Cancer Diagnosis on Death Certificates, *Cancer*, 15(1):5-9, Jan.-Feb., 1962.
3. Clemmesen, J.: Distribution of Leukemia in Some European Countries Compared with the U.S.A., *Acta Unio Internat. Cancr*, 16(7):1611-1617, 1960.
4. Court Brown, W. M., Doll, R., Spiers, F. W., Duffy, B. J., and McHugh, M. J.: Geographical Variation in Leukaemia Mortality in Relation to Background Radiation and Other Factors, *Brit. M. J.*, 5188:1753-1759, June 11, 1960.
5. Davies, J. N. P.: Leukemia in Trans-Saharan Africa, *Acta Unio Internat. Cancr*, 16(7):1618-1622, 1960.
6. Gilliam, G.: Geographic Distribution and Trends of Leukaemia in the United States, *Acta Unio Internat. Cancr*, 16(7):1623-1628, July, 1960.
7. Gilmore, H. R., and Selesnick, G.: Environmental Hodgkin's Disease and Leukemia, *The Pennsylvania M. J.*, 65(9):1047-1049, Sept., 1962.
8. Graham, S., Levin, M. L., Lilienfeld, A. M., Dowd, J. E., Schuman, L. M., Gibson, R., Hempelmann, L. H., and Gerhardt, P.: Methodological Problems and Design of the Tristate Leukemia Survey, *Ann. N. York Acad. Sc.*, 107(2): 557-569, 1963.
9. Heath, C. W., and Hasterlik, R. J.: Leukemia Among Children in a Suburban Community, *Amer. J. Med.*, 34(6): 796-812, June, 1963.
10. Hewitt, D.: Geographical Pathology of Leukaemia in England and Wales, *Acta Unio Internat. Cancr*, 16(7): 1643-1647, July, 1960.
11. Levin, M. L., Haenszel, W., Carroll, J. E., Gerhardt, P. R., Handy, V. H., and Ingraham, S. C.: Cancer Incidence in Urban and Rural Areas of New York State, *J. Nat. Cancer Inst.*, 24(6):1243-1257, June, 1960.

(Continued on page 486)

Fecal Blood Loss

Detection by the Rachromate Method

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RADIOACTIVE CHROMIUM has been used by some investigators¹⁻⁵ to quantitate fecal blood loss. This same method has been employed to detect occult hemorrhage.⁶ Observations on the use of Rachromate** for these two situations are hereby reported.

Quantitative Measurement of Fecal Blood Loss

Various modifications in technique have been reported. Essentially the patient's own chromium labeled erythrocytes are injected intravenously and stools are collected subsequently over a period of days. The entire fecal specimen is homogenized by the addition of water and its radioactivity determined on an aliquot. A blood specimen for a standard is obtained after termination of the stool collection and its radioactivity per milliliter is determined. Calculation of the total amount of blood lost is based upon the following formula:

$$\frac{\text{Total count of stool}}{\text{Count per ml. of whole blood}} = \frac{\text{ml. of blood lost in the stool}}{\text{stool}}$$

This method serves as a satisfactory procedure for quantitating significant blood loss from the gastrointestinal tract.

Sensitivity of the Method

In order to determine the least amount of blood in the stool that the Rachromate method can theoretically measure, experiments using a phantom fecal mass were carried out in the laboratory. A man weighing 161 pounds with a hematocrit of 44 was injected with 30 milliliters of his whole blood in which the unwashed red blood cells had been tagged with 100 microcuries of Cr⁵¹. Twenty-four hours later blood was withdrawn into an oxalated test tube. A measured amount of this blood was added to 200 gram

homogenized starch paste and all thoroughly blended into a phantom fecal specimen. As shown in Table 1 it took only 0.15 milliliter of whole blood to show a significant increase in radioactivity over that of the background.*

Since very little radioactive chromate is reabsorbed by the gastrointestinal tract^{7, 8} it can be said that in a patient of this size and with this hematocrit, as

Rachromate provides a method for measuring quantitative fecal blood loss in slow or chronic gastrointestinal bleeding.

Incineration of the stool sample is a helpful improvement in technique.

Rachromate can be used in the detection of occult blood but is not as sensitive as the Hematest nor the Ham's benzidine filter paper test.

small an amount as 0.15 milliliter of blood lost in the stool can be measured.

Factors Influencing the Test: (1) If instead of 100 microcuries of Cr⁵¹ 200 microcuries were used even smaller amounts of blood could be detected. Table

* A significant increase in count in all tables was determined by calculation of the Critical Ratio (CR).

TABLE 1
WHOLE BLOOD QUANTITATION

Whole Blood	Phantom Feces Homogenized	Background Count per Min.	4 gm. Aliquot Count per Min.
.05 cc.	200 gms.	104	98± 5.8*
.10 cc.	200 gms.	101	94± 6.0*
.15 cc.	200 gms.	108 102± 2.6	114± 5.4*
.20 cc.	200 gms.	101	113± 5.4*
.25 cc.	200 gms.	94	121± 5.3*

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** Rachromate is Abbott's sodium radio-chromate (Cr⁵¹) sterile solution.

* Standard deviation based on three minute count.

2 shows this comparative data. Two patients of about the same weight were chosen. In patient *A* 100 microcuries were used while in patient *B* 200 microcuries were used. In the latter patient with a 100 gram homogenized phantom fecal specimen it took

TABLE 2
EFFECT OF CR⁵¹ DOSE
ON ALIQUOT COUNT

Body Weight = (Patient A) 109 lbs. Cr ⁵¹ dose = 100 μ c.			
Whole Blood	Homogenized Phantom Feces	Background Count per Min.	4 gm. Aliquot Count per Min.
.05 cc.	100 gms.	81 Average	82 \pm 6.4*
.10 cc.	100 gms.	89 83.3 \pm 3.0	94 \pm 6.0*
.15 cc.	100 gms.	80	96 \pm 5.9*

Body Weight = (Patient B) 104 lbs. Cr ⁵¹ dose = 200 μ c.			
Whole Blood	Homogenized Phantom Feces	Background Count per Min.	4 gm. Aliquot Count per Min.
.05 cc.	100 gms.	95 Average	109 \pm 5.5*
.10 cc.	100 gms.	96 95.3 \pm 3.4	118 \pm 5.4*
.20 cc.	100 gms.	95	142 \pm 4.8*

* Standard deviation based on three minute count.

only 0.05 milliliters of whole blood to show a statistically significant increase in radioactivity over that of the background. (2) In patients with large blood volumes the distribution of tagged red blood cells in the circulation is less, affecting all radioactivity measurements. This is shown in Table 3. Two patients with similar hematocrits were tagged with 200 microcuries of Cr⁵¹. One was a large man weighing 258 pounds while the other was a small woman weighing only 104 pounds. As shown in the table only 0.05 ml. of whole blood was needed to show increased stool radioactivity in the smaller patient whereas 0.15 ml. of whole blood was needed to show increased radioactivity in the patient with the larger blood volume. (3) The weight of the phantom fecal specimen used in this study is less than that of a normal stool which weighs about 150 to 200 grams. Such a specimen, in addition, needs at least an equal amount of water for thorough homogenization to assure equal distribution of red blood cells, thereby resulting in a dilution of radioactivity and decreasing the sensitivity of the method.

The Rachromate procedure, therefore, can detect very small quantities of blood in the feces although its sensitivity is influenced by the size of the patient, the dose of the isotope, and the need for homogenizing the specimen.

Although it is of interest to have some appreciation of minimal amounts of blood that can be determined by this method, its chief value is in quantitative measurements of blood loss in slow or chronic bleeding into the gastrointestinal tract.

The clinical need for such quantitative measurements however is infrequent and laboratory problems in handling fecal collections are obvious. It is probably because of this that the Rachromate method has not been widely used. Recently Buchanan introduced an improvement by incinerating the fecal mass rather than homogenizing it. Total radioactivity is determined on the residual ash. This method diminishes the problem in handling and eliminates homogenization. It appears to be quite accurate but requires an incinerator and the use of a hood.

Detection of Occult Hemorrhage

The sensitivity of the Rachromate method has already been discussed above, but a comparison of it with chemical tests for occult blood was next undertaken.

Numerous studies have been made in the past to

TABLE 3
EFFECT OF BLOOD VOLUME
ON ALIQUOT COUNT

Body Weight = (Patient A) 258 lbs. Cr ⁵¹ dose = 200 μ c.			
Whole Blood	Homogenized Phantom Feces	Background Count per Min.	4 gm. Aliquot Count per Min.
.05 cc.	100 gms.	104 Average	101 \pm 5.7*
.10 cc.	100 gms.	106 105.6 \pm 3.3	110 \pm 5.5*
.15 cc.	100 gms.	102	117 \pm 5.4*

Body Weight = (Patient B) 104 lbs. Cr ⁵¹ dose = 200 μ c.			
Whole Blood	Homogenized Phantom Feces	Background Count per Min.	4 gm. Aliquot Count per Min.
.05 cc.	100 gms.	95 Average	109 \pm 5.5*
.10 cc.	100 gms.	97 95.3 \pm 3.4	118 \pm 5.4*
.15 cc.	100 gms.	94	142 \pm 4.8*

* Standard deviation based on three minute count.

determine the most reliable clinical tests for the detection of occult blood in the stool. Hepler *et al.*, in 1953 carried out an extensive evaluation of the benzidine test and its many modifications comparing them with other known chemical tests for occult blood. Using the stools of 80 patients not on a restricted diet and with no evidence of gastrointestinal disorder he found that Ham's filter paper method*¹¹ showed only 26 per cent false positives as compared to 42.5 per cent for the guaiac filter paper test, 62.5 per cent for the Hematest tablet method, and 95 per cent for the benzidine base** filter paper test. He concluded that the simplicity of the Ham's test makes it a good screening test for occult blood.

Comparative Sensitivity with the Rachromate Method

The sensitivity of the Cr⁵¹ method was compared first with the benzidine base and Hematest. Table 4 shows the results. Known quantities of whole blood obtained from a patient previously injected with 200 microcuries of Rachromate were used. 0.05 ml. of this blood sample was added to a 181.8 gram phantom fecal specimen and homogenized. An aliquot of this was found to be positive with the benzidine base filter paper method and the Hematest method. The same aliquot however was negative for radioactivity using the standard Tracerlab well-type scintillation counter (Tracerlab model SC-71).

Since some factor in the feces decreases benzidine sensitivity,¹⁰ one cannot compare benzidine sensitivity in a phantom vehicle with a fecal specimen. Ham's filter paper method was therefore compared with the Cr⁵¹ test using feces. Whole blood was again obtained from a patient who had previously received Cr⁵¹ tagged red blood cells; 100 microcuries

were used. A 1:500 concentration of whole blood in normal saline solution was prepared. This mixture gave a strongly positive reaction with the Ham's benzidine filter paper test. A 4 ml. aliquot did not show significant radioactivity. Two ml. of this mixture was used to homogenize 2 grams of normal feces negative for occult blood. The Ham's test was still found to be positive with this homogenized sample, although it was negative for radioactivity. Table 5 summarizes the findings.

TABLE 5
HAM'S TEST AND CR⁵¹
METHOD COMPARED

1:500 Concentration of Whole Blood in NSS	Ham's Test	Cr ⁵¹ Method
4 ml.	+	±
2 ml. added to 2 gms. of feces and homogenized	+	-

Discussion

Quantitative measurements of blood loss in the gastrointestinal tract by the use of Cr⁵¹ are based on Owen's observation¹² that when a saline suspension of washed Cr⁵¹ labeled erythrocytes was placed in the stomach of a dog the observed total radioactivity in the feces approximated the dose introduced into the stomach. Using Cr⁵¹ Ebaugh found that the amount of fecal blood in normal subjects ranged from 0.3 to 2 ml. per day. Hughes Jones, using washed, chromium-tagged red blood cells, found that in two subjects it was 0.1 and 0.2 ml. Radioactivity from normal shedding of intestinal epithelium¹ rather than from red blood cells, however, remains a possibility. The conclusion of Bannerman that the Cr⁵¹ method has least value when blood loss is less than 2 ml. in the stool sample analysed seems warranted.

Articles in the literature are in conflict with respect to amounts of blood detectable by usual chemical methods. Mendeloff, in selecting a screening procedure for detecting occult blood in the feces, fed normal subjects varying amounts of whole blood. He observed that in a significant number 50 ml. of blood in the stomach may not exhibit positive guaiac tests even if every subsequent stool passed over a 72 hour period is examined. Andrews and Oliver Gonzalez attempted to measure quantitative fecal blood loss by a method based on hemoglobin quantitation with the use of a photoelectric colorimeter. They found that 15 to 70 per cent of small amounts of ingested blood could not be detected in the feces. Using a modified benzidine test, Needham and Simpson, on the other

TABLE 4
TESTS FOR OCCULT BLOOD
(Comparative Sensitivities)

Whole Blood	Phantom Feces	Benzidine Base	Hematest	Cr ⁵¹
.05 cc.	181.8 gms.	+	+	-
.10 cc.	181.8 gms.	+	+	±
.15 cc.	181.8 gms.	+	+	+
.20 cc.	181.8 gms.	+	+	+

* Three drops of 1 per cent benzidine dihydrochloride (1 gm. benzidine dihydrochloride in 20 ml. glacial acetic acid, 30 ml. distilled water and 50 ml. alcohol) and 3 drops of 0.6 per cent hydrogen peroxide added to a fecal smear. A blue color appearing in five minutes is considered positive. If 3 per cent hydrogen peroxide is used the test is read in one minute.

** Benzidine base used, not the dihydrochloride.

hand, found that 3 to 5 ml. of blood administered by stomach tube gave positive results.

The Rachromate technique might be of value in situations such as those just described where relatively large quantities of blood in the gastrointestinal tract have escaped detection by usual chemical tests. If these situations occur because of digestion and absorption of blood leading to negative chemical tests then the unabsorbable Cr^{51} particle should be readily detected in the stool collection by radioactive measurement.

There is a decrease in sensitivity of the benzidine test for feces as compared to saline.¹⁰ Brankamp reported that more blood taken orally is required to give a positive benzidine reaction in the feces than when the blood is mixed directly with it. The larger amount needed to obtain a positive fecal reaction with the usual benzidine test can probably be explained in part by digestion and absorption of the red blood cells during their transit through the gastrointestinal tract. This probably accounts for certain instances of positive radioactive stool samples when benzidine tests are negative. It can be theorized that in such instances bleeding has occurred high up in the gastrointestinal tract and that the red blood cells in their course through the intestinal tract have been fragmented and the remnants metabolized or reabsorbed leaving the chromium particle free in the stool. If bleeding is very slight and is from the lower portion of the gastrointestinal tract as in the terminal ileum, colon or rectum, a positive benzidine test on the stool can be expected although it is possible that no statistically significant increase in radioactivity would be shown. Since meat fibers and foods containing peroxidases can result in positive benzidine tests, the Cr^{51} method is probably more specific though not nearly as sensitive as the chemical tests.

References

- Holt, P. R.: Measurement of Gastrointestinal Blood Loss in Subjects Taking Aspirin. *J. Lab. and Clin. Med.* 56:717, 1960.
- Bannerman, R. M.: Measurement of Gastrointestinal Bleeding Using Radioactive Chromium. *Brit. Med. J.* 2:1032, 1957.
- Ebaugh, F. G., Jr., Clemens, T., Rodman, G., and Peterson, R. E.: Quantitative Measurement of Gastrointestinal Blood Loss. I. The Use of Radioactive Cr^{51} in Patients with Gastrointestinal Hemorrhage. *Am. J. Med.* 25:169, 1958.
- Levin, N. W., Hart, D., and Bothwell, T. H.: The Measurement of Gastrointestinal Blood Loss Using Radioactive Chromium. *South African Journal of Lab. and Clin. Med.* 5:93, June 1959.
- Hughes Jones, N. C.: Measurement of Red Cell Loss From Gastrointestinal Tract Using Radioactive Chromium. *Brit. Med. J.* 1:493, 1958.
- Ensrud, E. R., Owen, C. A., Jr., Dearing, W. H., and Waugh, J. M.: The Use of Radioactive Chromium in a Case of Clinically Unrecognized Recurrent Regional Enteritis With Occult Hemorrhage. *Gastroenterology* 33:837, 1957.
- Roche, M., Perez-Gimenez, M. E., Layrisse, M., and Diprieseo, E.: Study of Urinary and Fecal Excretion of Radioactive Chromium in Man; Its Use in Measuring Intestinal Blood Loss Associated With Hookworm Infestation. *J. Clin. Invest.* 36:1183, 1957.
- Kreula, M. D.: Absorption of Carotene From Carrots in Man and the Use of the Quantitative Chromic Oxide Indicator Method in the Absorption Experiments. *Biochemical J.* 41:269, 1947.
- Buchanan, D. L., and Sampson, L. T.: Incineration of Fecal Specimens for Radioactivity Measurements. *J. Lab. and Clin. Med.* 59:169, 1962.
- Hepler, O. E., Wong, P., and Phil, H. D.: Comparison of Tests for Occult Blood in Feces. *Am. J. Clin. Path.* 23:1263, 1953.
- Ham, T. H.: A Syllabus of Laboratory Examinations in Clinical Diagnosis. Cambridge, Harvard University Press, p. 496, 1950.
- Owen, C. A., Jr., Bollman, J. L., and Grindlay, J. H.: Radiochromium Labeled Erythrocytes for the Detection of Gastrointestinal Hemorrhage. *J. Lab. and Clin. Med.* 44:238, 1954.
- Mendeloff, A. I.: Selection of a Screening Procedure for Detecting Occult Blood in Feces. *J.A.M.A.* 152:798, 1953.
- Needham, C. D., and Simpson, R. G.: The Benzidine Test for Occult Blood in the Stools. *Quart. J. Med.* 21:123, 1952.
- Brankamp, R. G.: The Benzidine Reaction: Some Observations Relating to Its Clinical Application. *J. Lab. and Clin. Med.* 14:1087, 1928-1929.
- Andrews, J. S., and Oliver-Gonzalez, J.: The Quantitative Determination of Blood in Human Feces. *J. Lab. and Clin. Med.* 27:1212, 1941-1942.

Lymphoma

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- Lingeman, C. H.: The Epidemiologic Approach to Leukemia. II. Geographic Distribution in Indiana 1951-1960. *J. Indiana Med. Assn.*, 56(4):405-411, Apr., 1963.
- MacMahon, B.: Geographic Variation in Leukemia Mortality in the United States, *Pub. Health Rep.*, 72(1):39-46, Jan., 1957.
- Mancuso, T. F., Macfarlane, E. M., and Porterfield, J. D.: The Distribution of Cancer Mortality in Ohio, *Am. J. Pub. Health*, 45(1):58-70, Jan., 1955.
- Meadors, G. F.: Epidemiology of Leukemia, *Pub. Health Rep.*, 71(1):103-108, Feb., 1956.
- Patno, M. E.: Geographic Study of Cancer Prevalence within an Urban Population, *Pub. Health Rep.*, 69(8):705-715, Aug., 1954.
- Phillips, T.: Leukaemia and Geography, *Lancet*, 2: 659-61, Oct., 1959.
- Pinkel, D., and Nefzger, D.: Some Epidemiological Features of Adult Leukemia in the Buffalo, N. Y., Area, *Cancer*, 13(1):102-105, Jan.-Feb., 1960.
- Pinkel, D., and Nefzger, D.: Some Epidemiological Features of Childhood Leukemia in the Buffalo, N. Y., Area, *Cancer*, 12(2):351-357, Mar.-Apr., 1959.
- Sotiroff, G.: Recent Trends in the Incidence of and Mortality from Leukemia in Saskatchewan, *Canad. J. Pub. Health*, 50(8):342-43, Aug., 1959.
- Takeda, K.: Geographical Pathology of Leukaemia in Japan, *Acta Unio Internat. Cancr.*, 16(7):1629-1642, July, 1960.
- U. S. Department of Commerce, Bureau of the Census, United States Census of Population 1960—Kansas PC (1) 18A, 18B, 18C.
- Wood, E.: A Survey of Leukaemia in Cornwall, 1948-1959, *Brit. M. J.*, 5188:1760-1764, June 11, 1960.

Cushing's Syndrome

Gas-Liquid Chromatographic Studies of Urinary 17-Ketosteroids of a Patient With Probable ACTH Producing Bronchogenic Carcinoma: A Preliminary Report

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BILATERAL ADRENAL HYPERPLASIA associated with neoplasia arising from various non-endocrine tissues occurs with such frequency that coincidence is unlikely. Recently, certain of these tumors have been shown to contain appreciable quantities of a corticotropin (ACTH)-like material.¹⁻¹¹ Severe hypokalemia and alkalosis associated with a fulminant clinical course have been the usual findings in individuals with this disease association. Approximately one-fourth of all reported cases have died within three months of the onset of symptoms, so rapidly that many of the physical stigmata of Cushing's syndrome have been absent.¹² This report concerns a patient with a fulminating Cushing's syndrome and an oat-cell carcinoma of the lung. Final proof of corticotropin-like material in the tumor is not as yet available. The 17-ketosteroids were studied by gas-liquid chromatography (GLC). This technic of analysis is rapid and, although presently in a developmental phase, is expected to be a significant contribution to the separation and identification of steroid patterns in urine and blood in various diseases.

Clinical Summary

L. M., 69 years of age, entered Wesley Medical Center May 25, 1961, with symptoms of polydipsia, polyuria, dyspnea, edema, a ten pound weight gain, hoarseness, dry cough, acneiform rash of arms and chest, and swelling of her face. Her family reported a personality change associated with depression and episodes of weeping; profound weakness had developed.

In 1940 she was subjected to sub-total hysterectomy for uterine fibroids, and in 1954 a radical left mastectomy was performed for a grade II adenocarcinoma of the breast. Regional lymph nodes were free of metastatic lesions. In 1957 she was hospital-

ized for coronary insufficiency and moderate hypertension. At this time values for the fasting blood sugar and cholesterol were at the upper limits of normal. There was no family history of diabetes, other endocrinopathies, malignancy, or excessive cardiovascular disease.

Examination showed a depressed, obese Caucasian

A case of Cushing's syndrome associated with probable ACTH-producing bronchogenic carcinoma is reported. Gas-liquid chromatographic studies of the 17-KS excretion of this individual showed that 11-OH etiocholanolone excretion was excessive and no significant peaks for androsterone, dehydroepiandrosterone, and 11-OH androsterone were demonstrated. These data indicate the ketosteroid metabolism of these patients may vary significantly from Cushing's syndrome not associated with malignancy.

female with a rounded, red face and obvious dyspnea. The upper extremities appeared wasted, the skin quite thin. There was marked pretibial pitting edema and venous insufficiency. Her weight was 162 pounds, and blood pressure 170/100 millimeters of mercury. The fundi showed moderate A/V nicking. Auscultation of the chest revealed bilateral crackling basilar rales. The area of cardiac dullness was increased and the rhythm regular with occasional premature contractions. The abdomen was obese and the liver extended five centimeters below the right mid-costal margin. An atrophic cervical stump was present but the remainder of the pelvic examination was thought unremarkable. There was moderate facial hirsuties. An erythematous pustular eruption was present on the arms and chest. The neurologic examination revealed no abnormalities.

Laboratory studies showed values for hemoglobin of 17 Gm./100 ml., hematocrit 49 per cent, white

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blood count 6,000 with 80 per cent segmented cells and 20 per cent lymphocytes. Urinalysis showed four plus glycosuria, a specific gravity of 1.025 and a pH of 7.0. The fasting blood sugar was 364 mg./100 ml. and the serology non-reactive. Total proteins were 5.2 and the albumin 2.9 Gm./100 ml. Values for urea nitrogen, uric acid, creatinine, PBI, alkaline phosphatase and prothrombin time were within accepted normal limits. The serum sodium was 144, chloride 89, potassium 2.4, carbon dioxide combining power 49.4 (on another occasion, 55) and calcium 4.6 mEq./L. The phosphorous was 3.1 mg./100 ml. Urinary assays initially revealed 24-hour excretion values as follows: 17-ketogenic steroids (17-KGS) 45.2, 17-ketosteroids (17-KS) 32.4, pregnanediol 6.2 and pregnanetriol 4.9 mg./24 hrs. Following administration of 3 milligrams of dexamethasone daily for four days the 17-KGS excretion was 152, the 17-KS 110 mg./24 hrs. Insulin requirements varied between 30 and 40 units of NPH insulin.

Radiologic studies revealed a normal skull series and intravenous pyelogram. The chest x-ray showed an enlarged heart, widened mediastinum and a mass in the right upper lung field. Scalene node biopsies and bronchoscopy with bronchial washings were non-diagnostic with the exception of a report of squamous metaplasia. She died July 1, 1961, approximately two and one-half months following the onset of her symptoms.

At autopsy a tumor was found in the upper lobe of the right lung, measuring 4 cm. in diameter. The mediastinal lymph nodes contained metastatic tumor. The liver weighed 2,000 Gm. and contained several tumor nodules, the largest being 3 cm. in diameter. The left lung and bone marrow also contained metastatic tumor. Together, the adrenal glands weighed 40 grams and showed nodular hyperplasia. (No evidence of metastatic tumor was found.) The heart was enlarged and there was an old myocardial infarction, the coronary arteries showing moderate atherosclerosis. There was a small duodenal ulcer. A small atrophic right ovary was found. The uterine fundus and both fallopian tubes were absent. The pituitary gland was small and there was a small cystic necrotic area with recent hemorrhage in the posterior pituitary.

Microscopic examination disclosed the tumor to be small cell carcinoma (oat-cell). The metastatic sites in the liver also showed this pattern and spindle cell nature of the tumor cells was readily apparent. No evidence of Crooke's change was found in pituitary basophils. The adrenals showed cortical hyperplasia.

Methods and Special Studies

Urine collected prior to death was frozen after collection for subsequent gas chromatographic (GLC) studies. The tumor was quick-frozen shortly after

death and studies for ACTH-like activity are being done. It is not possible at this time to report that this tumor produced ACTH, although many factors suggest this probability.

GLC has only recently been utilized in the field of medicine, although industry has studied various hydrocarbons and fatty acids in this manner for some time. Separation and identification of 17-KS, both in known mixtures and in urine, have been accomplished though quantitation has not as yet been completely satisfactory. GLC is in essence a separation of compounds in their vapor state. It is rapid, requires small sample volumes and results in relatively clear separation. Radium is used as a source of radiation. The instrument used was a Barber-Colman Model 15 using an argon detector. Gas chrome P, 100-140 mesh with SE-30 coating was used.

GLC was accomplished following pre-treatment of urine specimens by enzyme and acid hydrolysis. The former is accomplished by incubating at room temperature for 72 hours a mixture of 10 ml. urine, 15,000 units glucuronidase (Ketodase) and 1 ml. of M. acetate buffer pH 4.5. Three extractions are made with 10 ml. amounts of dichloromethane. The pooled extracts are washed twice with 10 ml. of 0.1 N sodium hydroxide and twice with 10 ml. of water. 24 ml. of the organic phase is removed and dried at 50° C. under a stream of nitrogen. Acid hydrolysis is accomplished by adding 2 ml. of glacial acetic acid and 3 ml. of concentrated hydrochloric acid to 8 ml. of urine, and the mixture heated to 100° C. for 10 minutes. After cooling it is extracted with dichloroethylene. Following 15 minutes agitation the aqueous layers are removed. The organic phase is treated with sodium hydroxide pellets in a shaker for 15 minutes, filtered and dried at 50° C. under nitrogen. Residues of the above procedures are dissolved in acetone, dichloromethane, or dichloroethane so that one injection on the column consisting of 1 to 3 microliters will be equivalent to approximately 2 ml. of the original urine.

With the SE-30 column it is possible to separate and identify most metabolites of the 17-ketosteroids. Androsterone (A) and dehydroepiandrosterone (DHA) have nearly identical retention times and "travel" as a single peak, however the other compounds form individual peaks: Etiocholanolone (E), 11-ketoetiocholanolone (11-KE), 11-ketoandrosterone (11-KA), 11-hydroxyetiocholanolone (11-OHE), and 11-hydroxyandrosterone (11-OHA). Cholestane (C) is added to the mixture as a reference.

Gas-liquid chromatograms of normal pregnant urine following acid and enzyme hydrolysis are shown in *Figures 1 and 2*. In *Figure 1* pregnanediol (PDL), anticipated in such urine, is well demonstrated, and the changes resulting from acid hydrolysis are indicated. The A-DHA peak is decreased and many peaks

are demonstrated with retention times shorter than E. Many of these peaks are not present in Figure 2. The G-L chromatogram of urine from our patient is shown in Figure 3 (acid hydrolysis). Peaks for E, 11-KE, 11-KA and 11-OHE are shown (11-OHA and A-DHA peaks are not demonstrated). Changes secondary to enzyme hydrolysis of this urine are shown in Figure 4. The 11-OHE peak is markedly increased. Peak 1 in Figure 3 has been shown to be a breakdown product of 11-OHE following acid hydrolysis (standards of 11-OHE before and after acid hydrolysis were analyzed by GLC).¹³

Discussion

Jailer and others¹⁴ have studied the 17-KS of patients with bilateral adrenal hyperplasia (without carcinoma) by paper chromatography. Androsterone was relatively unchanged from values of normal individuals. DHA was detected in only two of their seven patients. The E/A ratio was 4:1. A relatively large amount of 11-OHA was found to be present and 11-OHE was moderately increased in five of seven patients. In contrast to these observations the studies of our patient revealed no demonstrable A, or DHA, and 11-OHE was markedly increased. Excessive quantities of DHA have been found in the urine of patients with adrenal cortical carcinoma by most investigators, although not invariably.¹⁵ Studies of normal individuals given labeled cortisol have shown the metabolites to be predominantly 11-OHE and 11-KE with a small amount of 11-OHA.¹⁶ Similar studies with labeled delta-4-androstenedione showed metabolites to be mainly 11-OHA with small amounts of 11-OHE and 11-KE.¹⁷ Long term ACTH therapy produces changes in ketosteroid metabolism somewhat similar to those observed in Cushing's syndrome. In short term ACTH treatment the increase in excretion has been relatively greater for the 11-oxy-17-ketosteroids (11-O-17-KS) than of the 11-desoxy-17-ketosteroids (11-DO-17-KS) and there is no significant change in E/A.¹⁴ These phenomena may explain the apparent "difference" observed in this patient with short-term, though intensive, adrenocortical stimulation from an oat-cell carcinoma. Though virtually all reported cases of this disease association that include autopsy findings have described liver metastases it seems unlikely that this fact might be responsible for the profound steroid changes involved.

It has not been generally appreciated that severe hypokalemia and alkalosis is relatively uncommon in uncomplicated Cushing's syndrome. Values of 3 mEq./L. for potassium associated with high CO₂ determinations occur in less than 10 per cent of these individuals.¹² Moderate to severe hypokalemic alkalosis has been present in all but two of the reported cases of Cushing's syndrome associated with a malig-

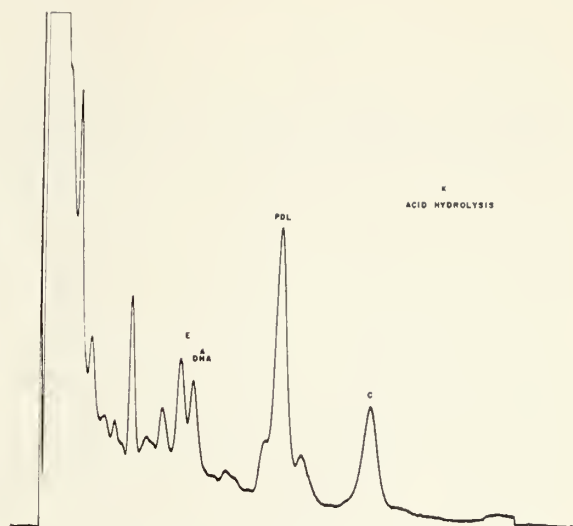


Figure 1. Gas-liquid chromatogram of 17-KS of pregnancy urine following acid hydrolysis. Pregnanediol (PDL) is indicated and numerous small peaks with retention times shorter than E are present. The A-DHA peak is reduced.

nancy. On occasion this metabolic state has been shown to precede the diagnosis of carcinoma by many months. The associated malignancies have, for the most part, been bronchogenic and thymic carcinomas, but also have included neoplasms of the pancreas, larynx, ovary, prostate, thyroid, colon, testicle, parotid gland and Rathke's pouch.^{7, 10}

Acknowledgement

Appreciation is expressed to Dr. Harvey Ellis for permission to study this case.

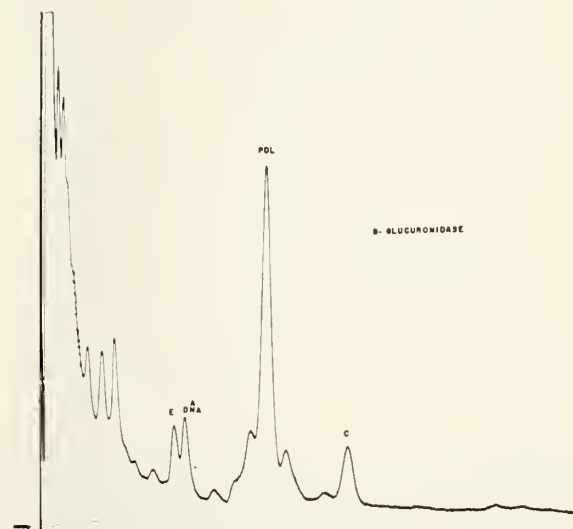


Figure 2. The same urine as Figure 1 following glucuronidase hydrolysis. The different relationship of the A-DHA peak to E is readily apparent.

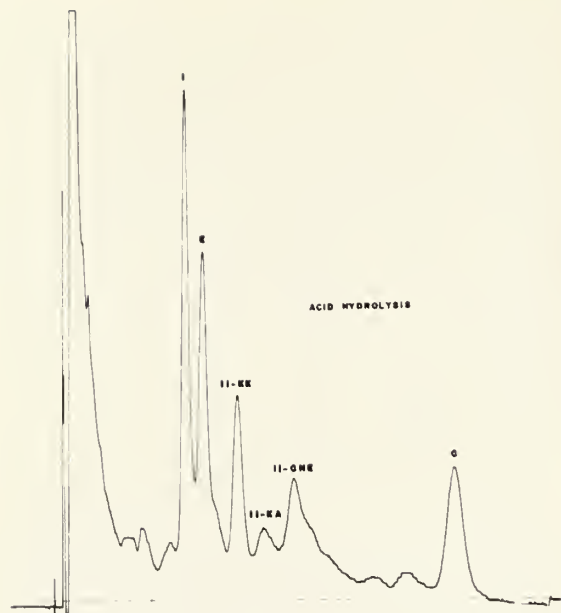


Figure 3. Gas-liquid chromatogram of 17-KS of urine of our patient following acid hydrolysis. Peaks for A-DHA and 11-OHA are not demonstrated. A modest 11-OHE peak is shown and peak No. 1 with a retention time shorter than E is indicated.

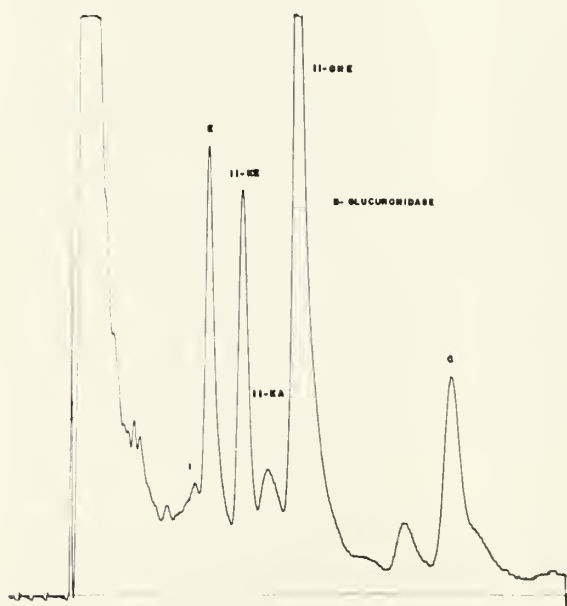


Figure 4. Glucuronidase hydrolysis of patient's urine. Larger peaks for 11-KE and 11-OHE are present and peak No. 1 is quite small. Acid hydrolysis modifies principally the 11-OHE peak and produces a large peak with a shorter retention time than E. No A-DHA peak or 11-OHA peak is demonstrated.

Addendum

Dr. Grant W. Liddle, Vanderbilt School of Medicine, has reported the ACTH assays since the completion of this paper. The mean estimate of potency of the lung tumor revealed 1.7 milli-units per gram with 95 per cent confidence limits of 1.1 to 2.7. The assay for ACTH-like activity of the hilar metastasis was 0.58 (0.32 to 1.1) mU per gram. We are very grateful to Dr. Liddle for these studies which prove the contention that this was an ACTH-producing tumor.

References

1. Meador, C. K., Liddle, G. W., Island, D. P., Nicholson, W. E., Lucas, C. P., Nuckton, J. G., and Luetscher, J. A.: Cause of Cushing's syndrome in patients with tumors arising from "Nonendocrine" tissue. *J. Clin. Endocrinol. and Metab.* 22:693, 1962.
2. Marks, L. J., Russfield, A. B., and Rosenbaum, D. L.: Corticotropin-secreting carcinoma. *J. Am. Med. Assoc.* 183: 115, 1963.
3. Marks, L. J., Rosenbaum, D. L., and Russfield, A. B.: Cushing's syndrome and corticotropin-secreting carcinoma. *Ann. Int. Med.* 58:143, 1963.
4. Pfohl, R. A., and Doe, R. P.: Adrenal-pituitary studies in a patient with bronchogenic carcinoma and Cushing's syndrome. *Ann. Int. Med.* 58:993, 1963.
5. Liddle, G. W., Island, D. P., Ney, R. L., Nicholson, W. E., and Shimizu, N.: Nonpituitary neoplasms and Cushing's syndrome. *Arch. Int. Med.* 111:471, 1963.
6. Scholz, D. A., Riggs, B. L., Bahn, R. C., and Liddle, G. W.: Adrenocortical hyperfunction associated with a corticotropin-secreting carcinoma: Report of a case. *Proc. Mayo Clin.* 38:45, 1963.
7. Liddle, G. W., Island, D. P., Ney, R. L., Nicholson, W. E., and Shimizu, N.: Ectopic "ACTH" produced by non-pituitary neoplasms as a cause of Cushing's syndrome. *Arch. Int. Med.* 111:129, 1963.
8. Nichols, J., Warren, J. C., and Mantz, F. A.: ACTH-like excretion from carcinoma of the ovary. The clinical effects of m, p'-DDD. *J. Am. Med. Assoc.* 182:713, 1962.
9. Nichols, J., and Gourley, W.: Adrenal weight-maintaining corticotropin in carcinoma of lung. *J. Am. Med. Assoc.* 185:696, 1963.
10. Clinicopathological Conference: Cushing's syndrome associated with a parotid gland tumor. *Am. J. Med.* 34:394, 1963.
11. Jarett, L., Lacy, P. E., and Kipnis, D. M.: Characterization by immuno-fluorescence of "ACTH-like" substance produced by non-pituitary tumors (abstract). *Am. J. Path.* 43:11a, 1963.
12. Bagshawe, K. D.: Hypokalemia, carcinoma and Cushing's syndrome. *Lancet* 2:284, 1960.
13. Cawley, L. P., and Musser, B. O.: Evaluation of methods of hydrolysis of urinary steroids by means of gas-liquid chromatography (abstract). *Am. J. Clin. Path.* 39: 301, 1963.
14. Jailer, J. W., VandeWiele, R., Christy, N. P., and Lieberman, S.: Studies in Cushing's syndrome. III. Urinary 17-ketosteroids in patients with bilateral adrenal hyperplasia. *J. Clin. Invest.* 38:357, 1959.
15. VandeWiele, R., and Lieberman, S.: In Pincus, G., and Vollmer, E. P. (eds.): *Biological activities of steroids in relation to cancer*. Academic Press, Inc., New York, 1960.
16. Burnstein, S., Savard, K., and Dorfman, R. I.: The *in vivo* metabolism of hydrocortisone. *Endocrinol.* 53:88, 1953.
17. Bradlow, H. L., and Gallagher, T. F.: Metabolism of 11 β -hydroxy- Δ^4 -androsterone-3, 17-dione in man. *J. Biol. Chem.* 229:505, 1957.

The Vectorcardiogram . . .

. . . as an Aid in the Diagnosis of Myocardial Infarction

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GREAT STRIDES HAVE BEEN MADE in the field of vectorcardiography in recent years, as evidenced by the great influx in the medical literature of well-conducted vectorcardiographic studies. Thus vectorcardiography has been reported to be of diagnostic significance in certain congenital cardiopathies.¹⁻⁶ It is claimed to have materially contributed to our knowledge of the sequence of ventricular activation in normal conduction⁷ and in bundle-branch blocks,⁸⁻¹³ and has led to a more precise localization of the site of myocardial infarctions.¹⁴⁻¹⁶ Such growing enthusiasm in the potentials of vectorcardiography is understandable when one realizes that the entire period of ventricular depolarization—the QRS interval of .08 to .10 second—is condensed into 2 to 2.5 mm. length of the EKG paper in routine electrocardiography, but that on a vectorcardiogram it is expanded so that individual vector forces lasting as little as .001 to .002 second can be recognized in terms of their magnitude and spatial orientation. This great attribute of vectorcardiography is seen to particular advantage in the diagnosis of old myocardial infarcts, especially those involving the diaphragmatic or true posterior wall of the left ventricle, or infarcts complicated by bundle branch blocks. Data presented in this report elucidates some of these points.

Material and Methods

Patients included in the study were selected on the basis of (1) a bona fide history of an acute myocardial infarction in the past, or (2) inconclusive abnormalities in recent electrocardiograms. Only representative cases are included in this report. Vectorcardiograms were not done during the acute phase of the myocardial infarction, since the ST-T changes of an acute infarct were felt to be adequately reflected in routine electrocardiograms.

Vectorcardiograms were recorded by a Hart Vectorcardiograph Model PV-3, employing Grishman's

cube lead system.¹⁷ The vectorcardiograms were interrupted 500 times per second by intensity modulation and were photographed from the oscilloscope with a Polaroid camera. Horizontal, right sagittal and frontal views of the P, QRS and T spatial vectors were ob-

Cases of myocardial infarction involving (1) the diaphragmatic wall alone or in combination with the anterior wall, and (2) the true posterior wall of the left ventricle were presented, and the role of vectorcardiography in their diagnosis demonstrated, especially when the electrocardiographic changes were inconclusive.

tained. The T loop was frequently "cut off" to enable better visualization of the initial forces of the QRS vector. Details of P and T loops were not clear enough for adequate analysis in most of the vectorcardiograms. The duration, direction of inscription, long axis and the contour of the QRS spatial vector were studied in each planar projection. Heads of the comet-shaped dots comprising the loop pointed in the direction of inscription of the loop. The orientation of any part of the loop or its long axis were expressed in terms of the planar reference frames,¹⁸ the method being similar to the hexaxial reference system in electrocardiography.

A normal vectorcardiogram recorded in our laboratory is illustrated (*Figure 1*) showing normal duration, long axis and direction of inscription of the QRS spatial vector in different planes. Normally the efferent or centrifugal limb of the R loop is convex anteriorly in horizontal and right sagittal projection and is bowed outward—away from the center of the loop—in the frontal plane.

Figure 2 shows a diagrammatic normal QRS horizontal loop (drawn in solid line), where the depolarization forces of the anteroseptal wall of the left ventricle are represented by vector A, operating during the first .04 second of the QRS interval, and,

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Figure 1

therefore, forming a part of the first .04 second maximal mean QRS vector. The maximal mean instantaneous .01, .02 and .04 second QRS vectors—represented by the long arrows—are the algebraic summation of all the depolarization forces active at respective moments during ventricular activation. The dotted loop shows the effect of an anteroseptal myocardial infarction on the horizontal QRS loop. Vector A is now missing since the anterospetal wall has become electrically inert; it is, therefore, in effect subtracted from the net ventricular depolarization forces operating during the first .04 second, deviating the maximal mean instantaneous .01, .02, and .04 second QRS vectors (drawn in dotted arrows) away from the anteroseptal wall, that is, posteriorly. It is much as though the infarction gave rise to new abnormal forces—designated as infarction vector or vector B—which were located diametrically opposite but were equal in magnitude to the pre-infarction vector A. Forward concavity seen in the centrifugal limb of the post-infarction R loop is characteristic of an anteroseptal infarct, and is confined to the period of ventricular activation sequence during which the anteroseptal wall normally undergoes depolarization. A lucid understanding of the normal sequence of ventricular activation, therefore, is of inestimable value in the vectorcardiographic detection of myocardial infarct. The lower two thirds of the interventricular septum—the first portion of the ventricular musculature to be depolarized—is activated in less than .02 second, followed by the apicoanterior, apicodiaphragmatic and free walls of the left ventricle in that order during the first half of the depolarization process. The posterior wall of the left ventricle, basal parts

of both ventricles and the upper third of the ventricular septum are activated in the latter half of the QRS interval.^{18, 21}

Diaphragmatic Myocardial Infarction

Criteria for a diaphragmatic myocardial infarct have been defined by numerous investigators.¹⁸⁻²⁰ Until quite recently, abnormal Q waves measuring .04 second or more in duration in leads III and aVf had been considered a sine qua non for its diagnosis. According to Massie and Walsh,²¹ however, only 36 per cent of their cases of acute and old diaphragmatic infarcts had diagnostic Q waves in III and aVf. Old diaphragmatic infarcts pose an even more knotty

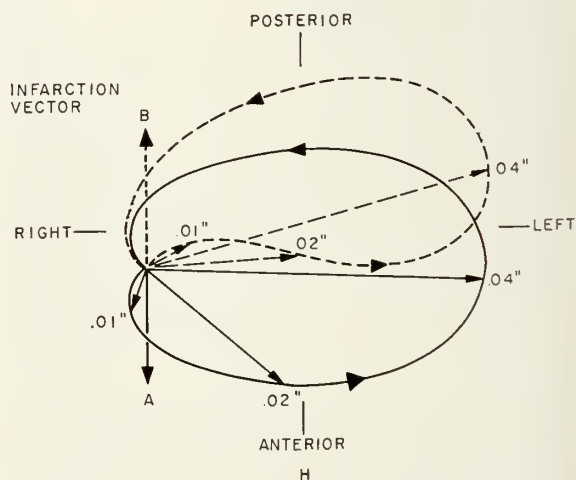


Figure 2

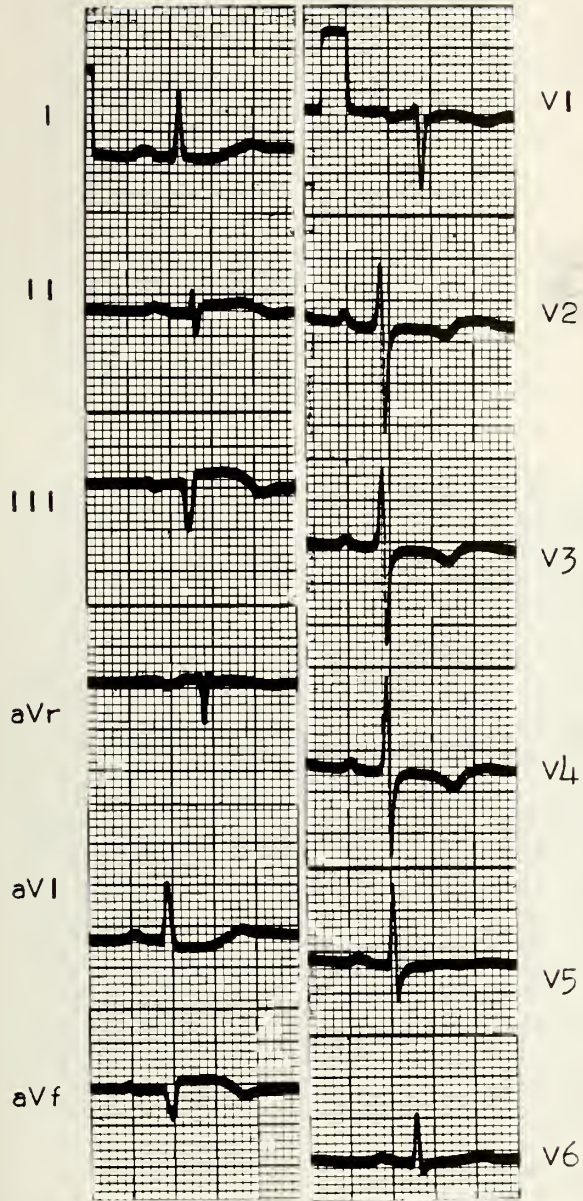


Figure 3

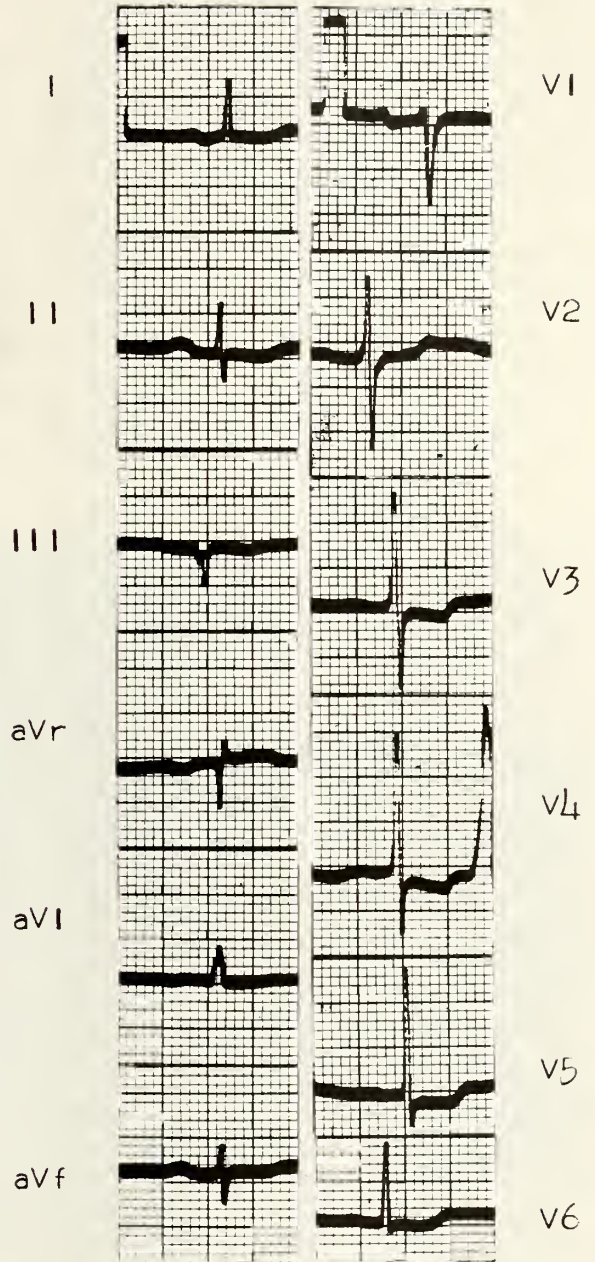


Figure 4

diagnostic problem since in a significant percentage of cases the pathologic Q waves seen during the acute phase not only regress but frequently disappear over months to years. A vectorcardiogram frequently seems to help unmask the presence of the old diaphragmatic damage in such cases.

Case Reports

Case No. 1: J. M., a 75-year-old white male, suffered from an acute myocardial infarction in April, 1960. An electrocardiogram taken on admission to the University of Kansas Medical Center (*Figure 3*) showed the characteristic signs of an acute diaphragmatic infarct—large Q waves in III and aVf and a small Q wave in II with coving of the ST segment and terminal T wave inversion in the same leads. Ischemic T waves were also present in V1-V4 precordial leads. An electrocardiogram recorded eighteen months later (*Figure 4*) revealed a slurred QS complex in III, but the Q waves previously seen in II and aVf were no longer present. These changes per se do not meet the

conventional criteria for a diaphragmatic wall infarction.

A vectorcardiogram done at the time of the last electrocardiogram (*Figure 5*) showed normal rotation of the QRS loop in all three planes. In the frontal projection, the inferiorly directed concavity of the centrifugal limb of the R loop and superior deviation of the .04 second vector are definitely abnormal findings and indicative of a diaphragmatic myocardial infarction.¹⁶ In our experience, such a contour of the frontal plane R loop is not seen normally or in cases of marked left axis deviation without an associated diaphragmatic myocardial infarction. Frequent autopsy confirmation of such conclusions, however, would be mandatory to establish them on incontestable grounds. Posterior displacement of the long axis of the horizontal QRS loop, seen in this case, has been reported in uncomplicated diaphragmatic infarcts,²¹ and does not necessarily imply associated anterior wall infarct as well, unless there is a definite concavity anteriorly in the centri-

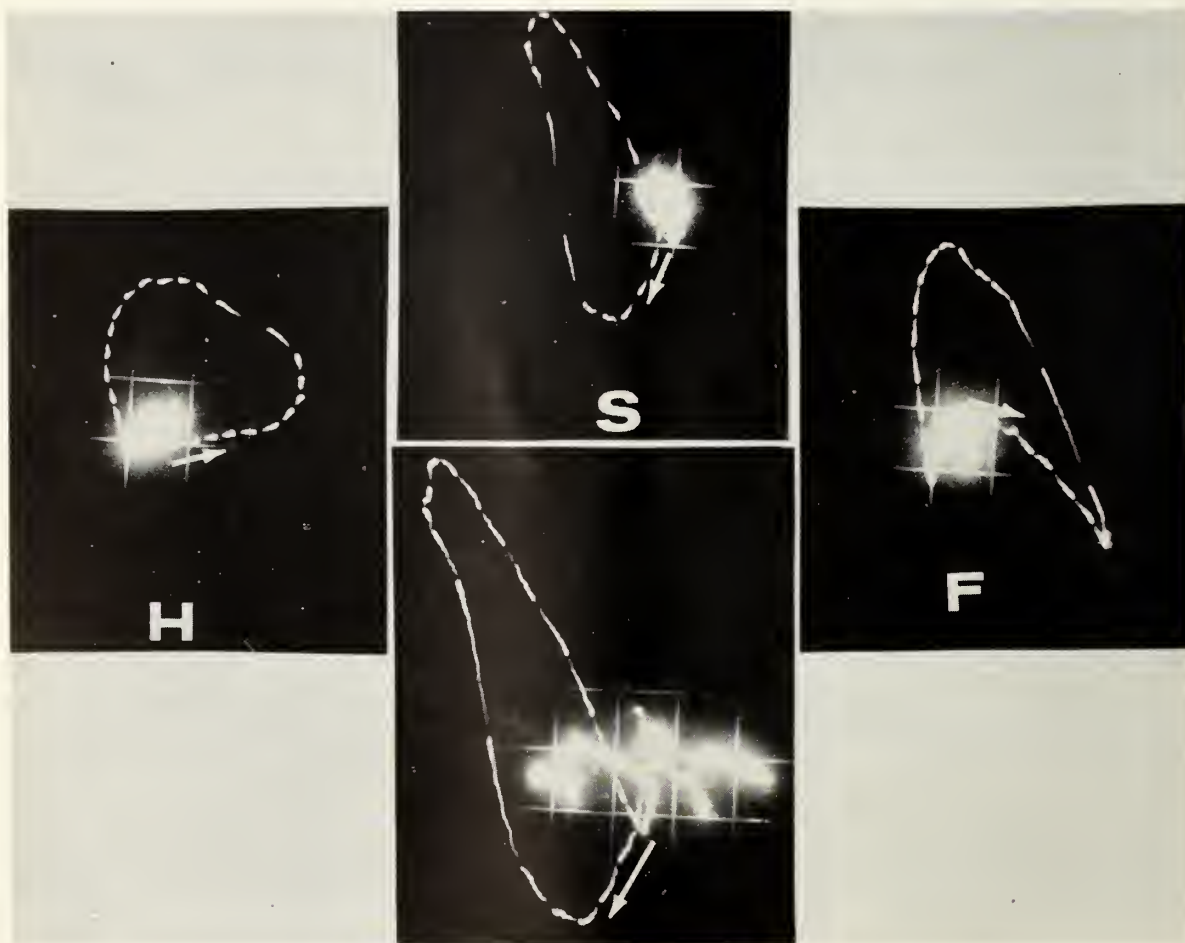


Figure 5

fugal limb of the horizontal R loop. (See *Figure 2*.)

Electrocardiographic signs of an old myocardial infarction may disappear following the occurrence of a second infarction in a different area of the ventricular myocardium, though the vectorcardiogram may continue to show the abnormalities from both infarcts. This is amply illustrated by the following case.

Case No. 2: J. R., a 68-year-old white male developed an acute coronary attack in 1958. One of the electrocardiograms taken during this episode (*Figure 6*) had the typical abnormalities of an acute diaphragmatic myocardial infarction in II, III and aVf. An electrocardiogram obtained eight months later (*Figure 7*) revealed smaller but significant Q waves in II, III and aVf associated with terminal ST depression as the residuals of the old diaphragmatic damage. Three months following the last electrocardiogram, the patient was rehospitalized with a second typical episode of prolonged cardiac pain. Diagnostic features of an acute anterior myocardial infarction were quite obvious on the electrocardiogram (*Figure 8*) taken during the acute phase, but quite interestingly the Q waves of the old diaphragmatic damage disappeared completely and T waves became upright in II, III and aVf. A recent electrocardiogram on this patient (*Figure 9*) revealed small slurred rsr's' QRS complex in III, but no conclusive evidence of the old diaphragmatic damage. Slurred predominantly negative QRS of V2 with an r wave smaller than that in V1, and absence of Q waves in V6 were the only remnants of the anterior myocardial infarction suffered two years previously.

A vectorcardiogram done at the time of the last electrocardiogram (*Figure 10*) shows absence of the Q loop, posterior deviation of the mean QRS axis and slight anterior concavity of the centrifugal limb of the R loop in the horizontal plane—findings indicating an old anteroseptal infarct. In the right sagittal and frontal planes, there is superior displacement of the long axis of QRS, a figure of "8" pattern of the loop with abnormal rotation of its proximal component, counter-clockwise in right sagittal and clockwise in frontal projections, and suggestion of slight inferiorly oriented concavity of the centrifugal limb of the R loop—abnormalities compatible with an associated diaphragmatic infarct.

True Posterior Wall Myocardial Infarction

The role of the vectorcardiogram in the diagnosis of true posterior wall myocardial infarctions has received increasing attention during the past few years.¹⁴⁻¹⁶

Case No. 3: E. M., a 39-year-old white male was admitted with schizophrenic symptoms and vague chest pains. On close inquiry, the patient presented

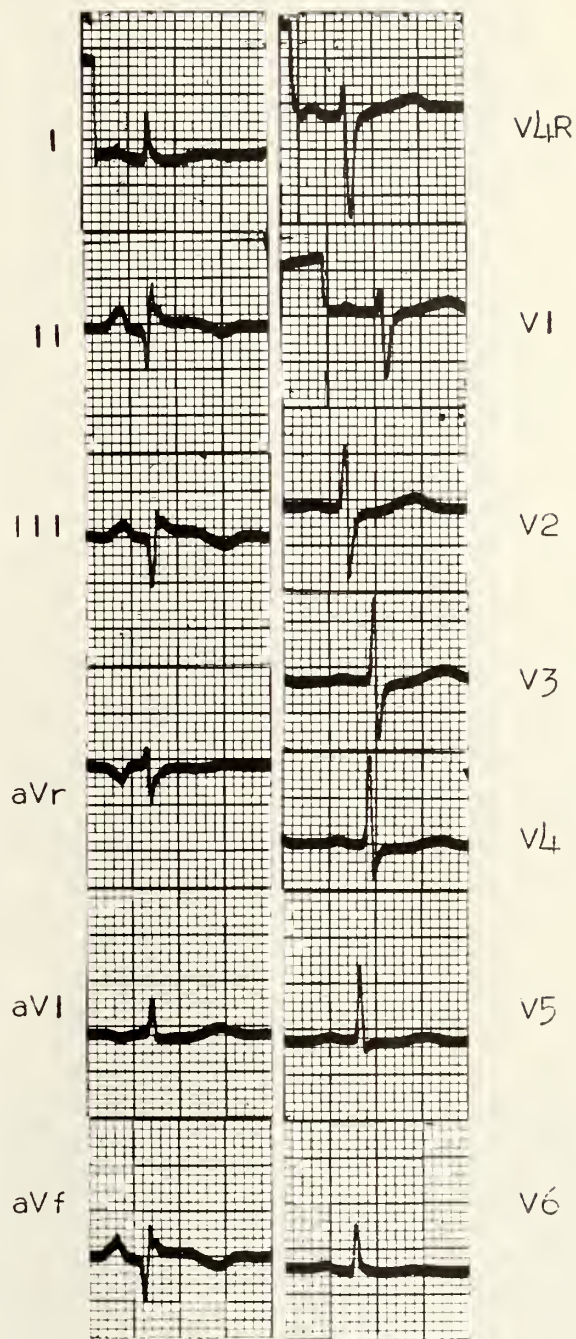


Figure 6

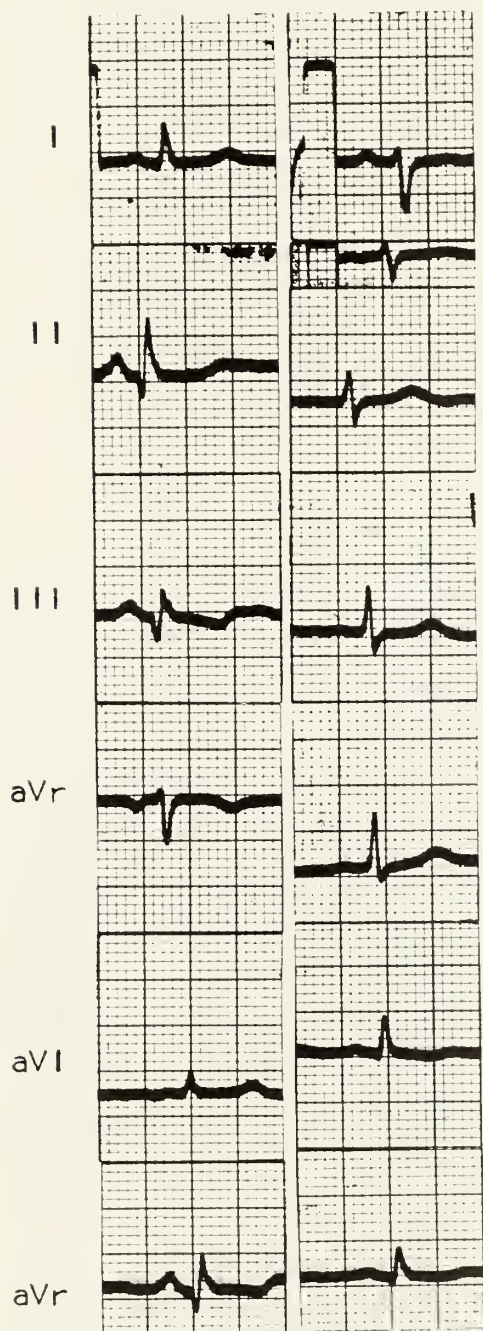


Figure 7

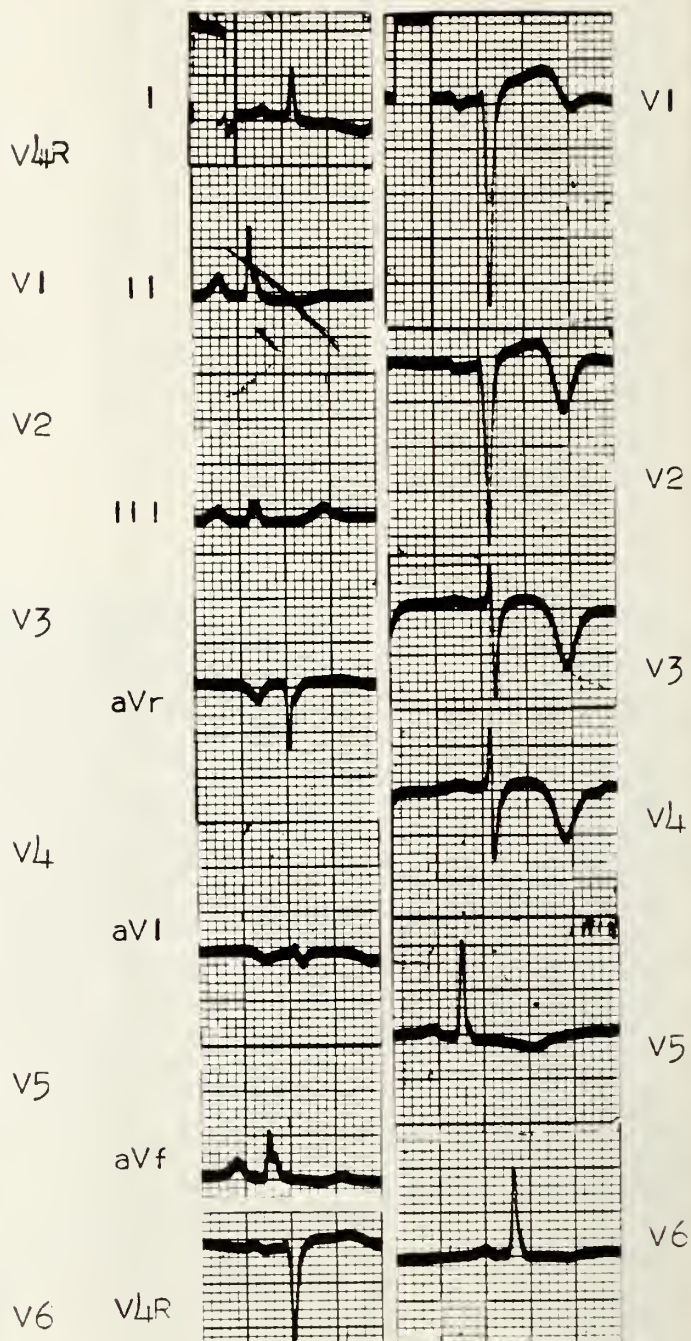


Figure 8

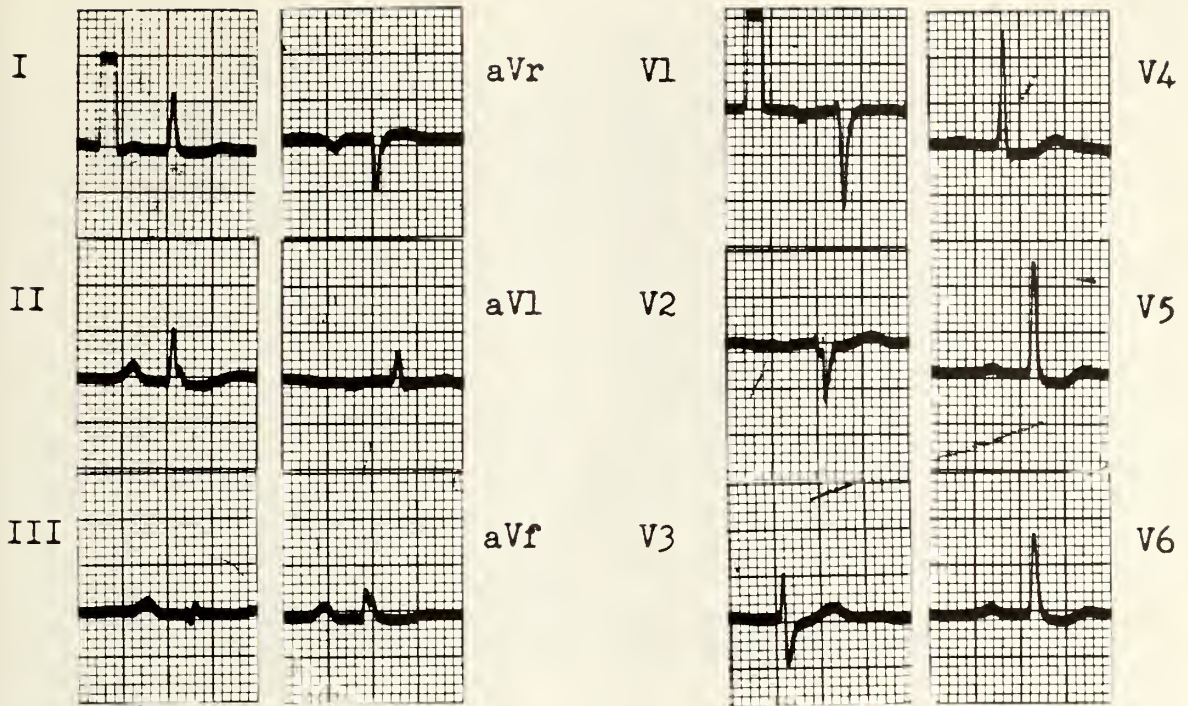


Figure 9

a history of typical cardiac type crushing chest pain of one to two hours' duration, suffered three years prior to admission, while chopping wood during the winter. He was confined to bed for a week following that episode, but had not sought any medical aid. Prominent R waves were noted in the right precordial leads in his electrocardiogram (Figure 11) with upright T waves, and peaked T waves in other precordial leads. The possibility of an old true posterior wall infarction was entertained, because of deviation of the QRS vector anteriorly toward the right precordial leads. The aforementioned upright tall T

waves were felt to represent a reciprocal effect of the posterior wall ischemia. Right ventricular hypertrophy as a cause for these electrocardiographic changes was ruled out on the basis of normal clinical and roentgenographic findings. His vectorcardiogram (Figure 12) showed a prominent Q loop—increased in magnitude anteriorly—a distinct posteriorly directed concavity of the centripetal limb of the R loop, and location of the entire QRS loop anterior to the "E" point in horizontal and right sagittal projections. Such abnormal anterior deviation of the initial (Q loop) and terminal (the centripetal limb of



Figure 10

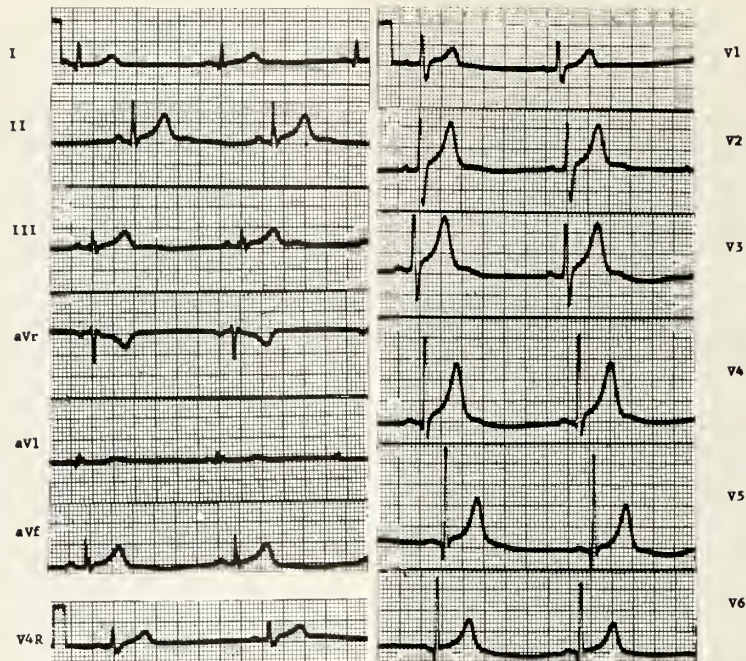


Figure 11

the R loop) QRS forces is quite characteristic of a true posterior wall myocardial infarction, since this area is normally depolarized in the terminal .04 second of QRS interval except for its paraseptal portion which shares early septal activation.

The electrocardiographic features of a true posterior wall myocardial infarction as presented above—tall R with upright T waves in the right precordial leads—were amply verified in the next patient.

Case No. 4: An electrocardiogram (Figure 13) was recorded from V. R., a 59-year-old white male

with clinical history of an acute myocardial infarction of a few hours' duration. The aforementioned criteria for a true posterior wall infarct were satisfied; slight ST depression in the right precordial leads—a reciprocal effect of a current of injury in the posterior wall—was interpreted as indicating this infarct to be an acute phenomenon. Abnormal Q waves in I, a V1 and V6 suggested extension of the infarctive process into the lateral wall of the left ventricle.

A vectorcardiogram was contemplated but could

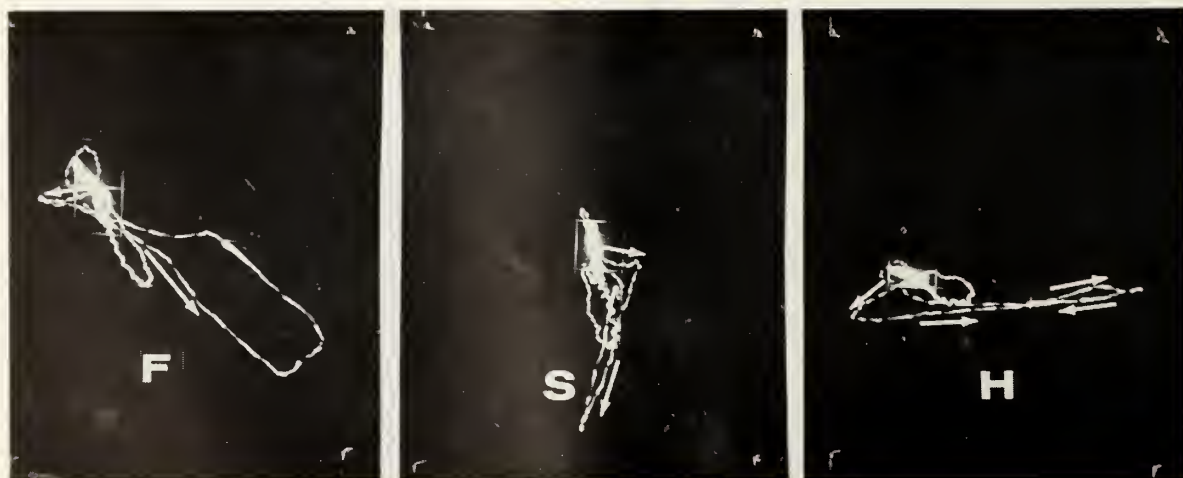


Figure 12

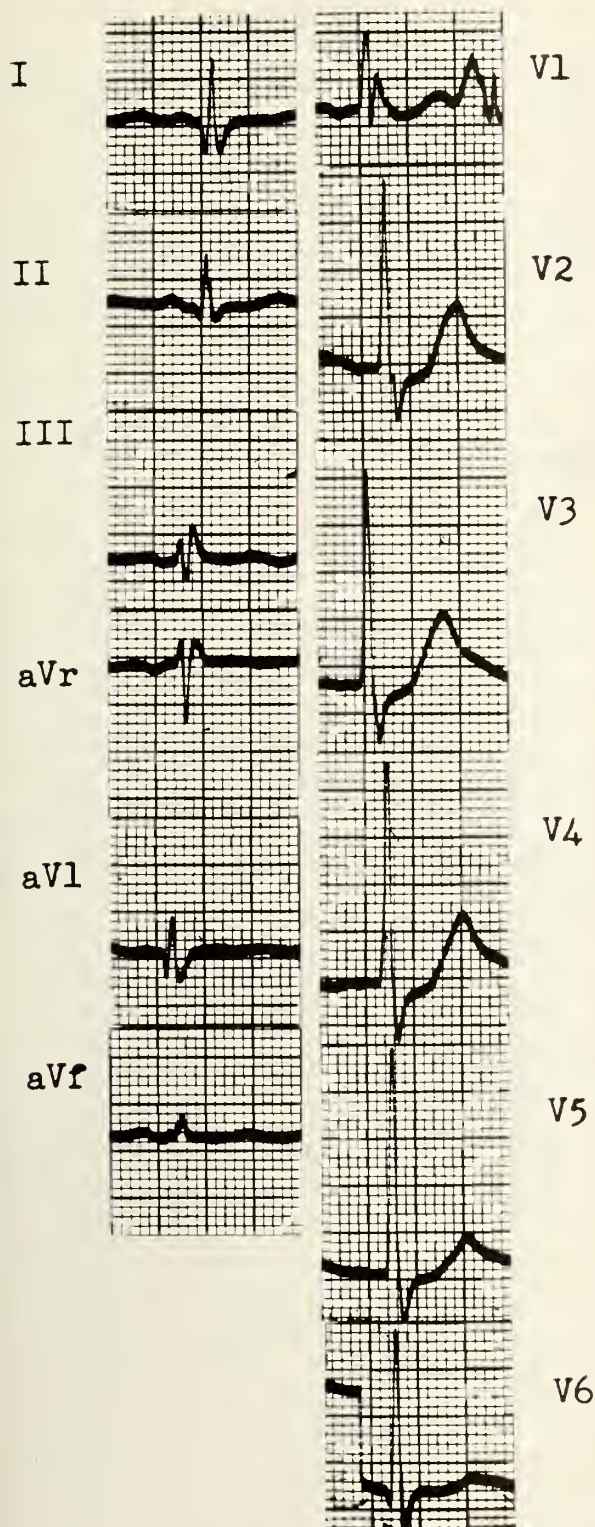


Figure 13

not be done, since the patient's condition deteriorated rapidly and he expired within 24 hours after admission from ventricular arrhythmia. Autopsy revealed a hemorrhagic infarct involving the true posterior and lateral walls of the left ventricle.

References

1. Burch, G. E. and DePasquale, N.: The Spatial Vectorcardiogram in Proved Congenital Atrial Septal Defect. *Am. Heart J.*, 58:319, 1959.
2. Weiner, S. M., Levinson, D. C. and Elek, S. R.: Ventricular Septal Defect and Pulmonary Hypertension: Electrocardiographic, Spatial Vectorcardiographic and Cardiac Catheterization Findings. *Am. J. Cardiol.*, 1:191, 1958.
3. Burch, G. E. and DePasquale, N.: The Electrocardiogram, Vectorcardiogram and Ventricular Gradient in Combined Pulmonary Stenosis and Interatrial Communication. *Am. J. Cardiol.*, 7:646, 1961.
4. Pileggi, F., *et al.*: The Vectorcardiogram in Interatrial Septal Defect and Persistent Atrioventricular Canal. *Am. Heart J.*, 62:447, 1961.
5. Burchell, H. B., DuShane, J. W. and Brandenburg, R. O.: The Electrocardiogram of Patients With Atrioventricular Cushion Defects. *Am. J. Cardiol.*, 6:575, 1960.
6. Pileggi, F., *et al.*: The Vectorcardiogram in Ventricular Septal Defect Associated With Pulmonary Stenosis. *Am. Heart J.*, 63:25, 1962.
7. Sodi-Pallares, D., *et al.*: The Ventricular Activation and the Vectorcardiographic Curve. *Am. Heart J.*, 54:498, 1957.
8. Wallace, A. G., Estes, E. H. and McCall, B. W.: The Vectorcardiographic Findings in Left Bundle Branch Block. *Am. Heart J.*, 63:508, 1962.
9. Sanchez, C., Walsh, T. J. and Massie, E.: The Vectorcardiogram in Incomplete Left Bundle Branch Block. *Am. J. Cardiol.*, 7:629, 1961.
10. Luna, R. and Jackson, A.: The Vectorcardiogram in Left Bundle Branch Block. *Am. J. Cardiol.*, 7:638, 1961.
11. Penaloza, D., Gamboa, R. and Sime, F.: Experimental Right Bundle Branch Block in the Normal Human Heart: Electrocardiographic, Vectorcardiographic and Hemodynamic Observations. *Am. J. Cardiol.*, 8:767, 1961.
12. Scherlis, L. and Lee, Y.: Transient Right Bundle Branch Block. An Electrocardiographic and Vectorcardiographic Study. *Am. J. Cardiol.*, 11:173, 1963.
13. Gardberg, M. and Rosen, I. L.: The Electrocardiogram and Vectorcardiogram in Various Degrees of Left Bundle Branch Block. *Am. J. Cardiol.*, 1:592, 1958.
14. Rothfeld, E. L., *et al.*: The Vectorcardiogram in Direct Posterior Wall Myocardial Infarction. *Am. J. Cardiol.*, 7:496, 1961.
15. Tranchesi, J., *et al.*: The Vectorcardiogram in Dorsal or Posterior Myocardial Infarction. *Am. J. Cardiol.*, 7:505, 1961.
16. Walsh, T. J., *et al.*: The Vectorcardiographic QRS \bar{E} -loop Findings in Inferoposterior Myocardial Infarction. *Am. Heart J.*, 63:516, 1962.
17. Grishman, A. and Scherlis, L.: Spatial Vectorcardiography, p. 12, Philadelphia, 1952, W. B. Saunders Co.
18. Sodi-Pallares, D. and Calder, R. M.: New Bases of Electrocardiography, p. 161, St. Louis, 1956, The C. V. Mosby Co.
19. Barker, J. M.: The Unipolar Electrocardiogram: A Clinical Interpretation, New York, 1962, Appleton-Century-Crofts, Inc.
20. Goldberger, E.: Unipolar Lead Electrocardiography and Vectorcardiography, Ed. 3, Philadelphia, 1953, Lea and Febiger.
21. Massie, E. and Welsh, T. J.: Clinical Vectorcardiography and Electrocardiography, Chicago, 1960, The Year Book Publishers, Inc.

Acidity and Acidosis

Gastric Acid Secretion in Pulmonary Emphysema

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THE INCREASED INCIDENCE of peptic ulcer in patients with pulmonary emphysema has been reported by numerous authors.¹⁻¹² From 15 to 40 per cent of patients with pulmonary emphysema have been reported as having peptic ulcers. This represents an occurrence of from two to five times the expected incidence of peptic ulcer. While all authors agree that the incidence of peptic ulcer is increased in pulmonary emphysema, there is less agreement on whether emphysematous patients are more prone to develop duodenal ulcer, gastric ulcer or both. In Cohen and Jenney's series¹² only two of a total of 12 patients with pulmonary emphysema and peptic ulcer had duodenal ulcer. On the other hand Latt, *et al.*, reported that 80 per cent of patients with a peptic ulcer and pulmonary emphysema had the ulceration located in the duodenum. Other authors^{5, 7, 8} have reported the frequency of duodenal ulcer in patients with pulmonary emphysema somewhere between these two extremes.

Numerous theories have been advanced to explain the high degree of association between pulmonary emphysema and peptic ulcer. In 1935, Wilbur and Ochsner reported the occurrence of peptic ulcer in 8 per cent of a large series of patients with polycythemia. This represents a higher than expected incidence of peptic ulcer and led other investigators^{7, 14} to postulate that the secondary polycythemia often associated with pulmonary emphysema is a major factor in the development of peptic ulceration. In 1947 Wolf and Wolff advanced the idea that patients with pulmonary emphysema are subjected to periods of hostility and resentment which causes an increased gastric acid secretion.

In 1957, Plotkin mentioned three factors which may explain the increased incidence of peptic ulceration in patients with pulmonary emphysema. First, hypercapnia provides more bicarbonate to the gastric parietal cell which utilizes it for the production of more acid. Second, Plotkin found a decreased number of circulating eosinophiles in patients with pulmonary

emphysema and peptic ulcer and postulated that these patients had an increased production of adrenal steroids. Adrenal steroids would cause an increased gastric acidity, increased protein catabolism and in-

Twenty-six patients with symptomatic pulmonary emphysema were studied with gastric analyses, upper gastrointestinal x-rays, timed vital capacities, venous carbon dioxide combining powers, arterial blood pH's and pCO₂'s. An effort was made to find a correlation between gastric acidity (as measured by the basal acid production and acid production after betazole hydrochloride stimulation) and respiratory acidosis (as measured by the venous carbon dioxide combining power, arterial blood pH and pCO₂ and timed vital capacity). No such correlation could be found. There was no significant difference in the degree of respiratory acidosis as measured by the above values between the patients with gastric hyperacidity and those with normal or low acidity. Those patients with a history or x-ray findings suggesting a past or present peptic ulcer showed no difference in the degree of respiratory acidosis than those without peptic ulcer. It is concluded that hypercapnia and respiratory acidosis have little to do with the increased incidence of peptic ulcer in patients with pulmonary emphysema.

hibit fibroplasia; all of which would be conducive to peptic ulcer formation. Third, Plotkin mentioned that cell damage from anoxia or pulmonary infections released histamine which would further stimulate the production of acid by the stomach.

Flint and Warrack in 1958 mentioned respiratory infections, drugs, derangement of blood gases, congestive failure, mental and physical strain, tobacco, diet, and malnutrition as possible etiologic factors in the genesis of peptic ulcer in patients with pulmonary emphysema.

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In 1959 Silen, Eiseman, and Brown pointed out that carbon dioxide accumulation, anoxia, polycythemia, and psychosomatic factors were important in explaining the high degree of association of the two diseases.

Perhaps the most provocative explanation for the occurrence of peptic ulcer in patients with pulmonary emphysema comes from the work of Bernard, Isreal, and Debris. They studied a large series of patients with pulmonary emphysema and demonstrated that peptic ulcer occurred much more frequently in those emphysematous patients with a positive sweat test. They felt that the association of these two diseases represented mucoviscidosis manifesting itself by sclerosis of the mucous glands of the digestive as well as the respiratory tract.

In an effort to shed further light on this problem a series of patients with pulmonary emphysema was studied to determine whether there was any correlation between gastric acid production before and after stimulation by betazole hydrochloride (Histalog) and pulmonary function as measured by the timed vital capacity, arterial blood carbon dioxide tension and pH and venous carbon dioxide combining power.

Method

Twenty-six male patients with pulmonary emphysema were chosen at random for this study. In all cases the patients were having symptoms of respiratory insufficiency from their disease. No patient was included in the series whose one second timed vital capacity was over 55 per cent of his total vital capacity. The patients varied in age from 46 to 75 years with an average age of 63 years.

Gastric analysis was done by intubation in all patients except two. The patient was in a fasting state when the tube was passed. Continuous gastric suction was employed and the gastric juice collected for a period of one hour. Then betazole hydrochloride (0.5 mgm./kgm.) was injected subcutaneously and four 15 minute specimens of gastric juice were collected by continuous suction. An effort was made to collect all the gastric secretions by having the patient lie on his left side to minimize loss of gastric juice into the duodenum during the collection period. Acid secretion was expressed as millequivalents of total acid produced per hour. Values below 2 mEq. per hour in the basal state and below 20 mEq. per hour after stimulation with betazole hydrochloride were considered normal. Values above these levels were interpreted as representing hyperacidity. Intubation was not possible in two patients because of severe dyspnea and lack of cooperation. Tubeless gastric analysis with azuresin granules (Diagnex Blue) was done in these patients and both excreted less than

0.6 mgm. of dye per hour in the urine representing gastric hypochlorhydria.

Arterial blood was obtained for pH and $p\text{CO}_2$ determinations by femoral artery puncture. Normal arterial blood pH was considered to be 7.35 to 7.45. Normal arterial $p\text{CO}_2$ was considered to be 38 to 42 mm. Hg. Venous blood was obtained for carbon dioxide combining power values. Normal values ranged from 24 to 30 mEq./L.

The patients were asked specifically about symptoms of peptic ulcer. An upper gastrointestinal x-ray was obtained in all cases. A patient was considered to have had a peptic ulcer if he gave a history compatible with peptic ulcer or had a deformed duodenal bulb. It is realized that this manner of patient selection will probably include some patients who did not have peptic ulcer and exclude others who did have peptic ulcers, but it seemed to be the most practical way to divide the patients for purposes of this study. Of the 26 patients, there were eight in the ulcer group and 18 in the nonulcer group. In no case was an active ulcer demonstrated on x-ray.

No. Patients

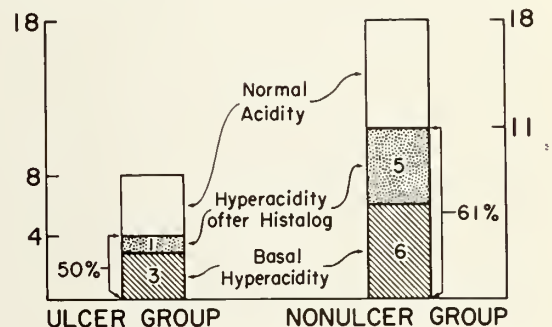


Figure 1. Chart showing the number of patients in the ulcer and the nonulcer group with basal hyperacidity and hyperacidity after betazole stimulation. There is no significant difference in the incidence of hyperacidity between the two groups. Note the high incidence of hyperacidity in both groups.

The 26 patients with pulmonary emphysema were also divided into a group who had gastric hyperacidity as measured by an increased gastric acidity after betazole hydrochloride stimulation or an increased basal level of gastric acidity and a group with normal or low acidity. There were 13 patients in each of these groups.

Results

In analyzing the data obtained from the ulcer group and the nonulcer group of patients, it was found that there was no statistically significant difference between the values of the total vital capacity, timed

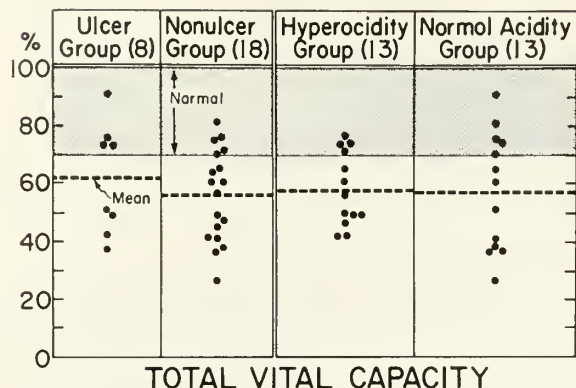


Figure 2. Chart showing the total vital capacities in various groups of patients with pulmonary emphysema. There is no significant difference in the vital capacities of the various groups.

one second vital capacity, arterial blood pH and $p\text{CO}_2$ and venous carbon dioxide combining power of the two groups. The average total vital capacity was 61.8 per cent for the ulcer group and 55.7 for the nonulcer group. The average timed one second vital capacity was 38.1 per cent for the ulcer group and 37.7 per cent for the nonulcer group. The average blood pH was 7.41 for the ulcer group and 7.39 for the nonulcer group. The average arterial blood $p\text{CO}_2$ was 43.5 mm. Hg. for the ulcer group and 46.8 mm. Hg. for the nonulcer group. The average venous carbon dioxide combining power was 38.0 mEq. L. for the ulcer group and 31.9 mEq. L. for the nonulcer group.

When the 26 patients with pulmonary emphysema were divided into those with gastric hyperacidity and those with normal or low acidity, again there was no statistically significant difference between the values of the total vital capacity, timed one second vital

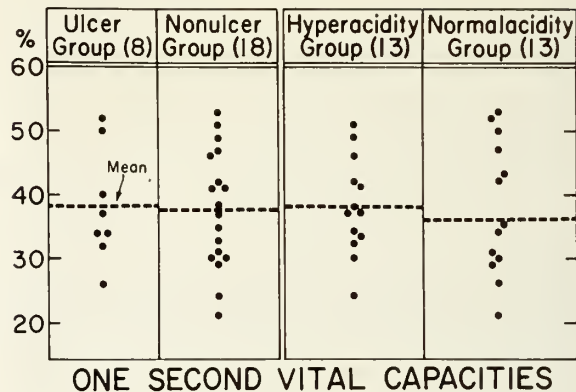


Figure 3. Chart showing the timed one second vital capacities in various groups of patients with pulmonary emphysema. There is no statistically significant difference in the timed one second vital capacities of the various groups.

capacity, arterial blood pH and $p\text{CO}_2$ and venous carbon dioxide combining power of the two groups. The average total vital capacity was 57.8 per cent for the hyperacidity group and 57.4 per cent for the normal acidity group. The average timed one second vital capacity was 38.0 per cent for the hyperacidity group and 36.1 per cent for the normal acidity group. The average arterial blood pH was 7.39 for both groups. The average arterial blood $p\text{CO}_2$ was 44.0 mm. Hg. for the hyperacidity group and 48.9 mm. Hg. for the normal acidity group. The average carbon dioxide combining power was 32.1 mEq. L. for the hyperacidity group and 32.0 mEq. L. for the normal acidity group.

An effort was made to correlate high levels of gastric acidity with high arterial $p\text{CO}_2$ values, low arterial

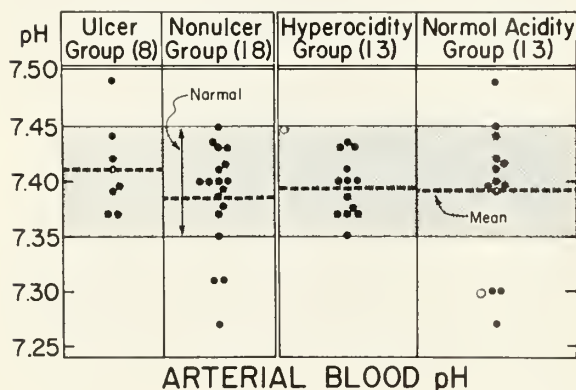


Figure 4. Chart showing the arterial blood pH values in various groups of patients with pulmonary emphysema. There is no statistically significant difference in the values of the various groups. Note that the three patients with abnormally low blood arterial pH values fell into the nonulcer and normal acidity groups.

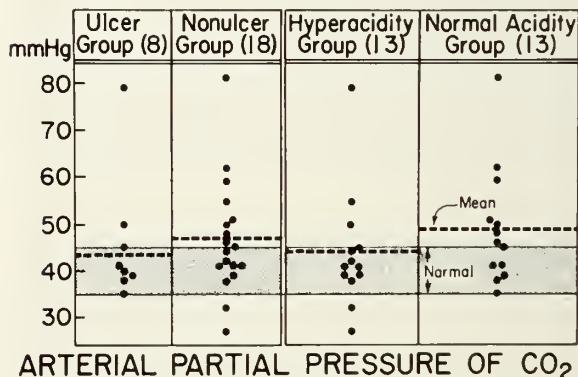


Figure 5. Chart showing the arterial partial pressure of carbon dioxide in various groups of patients with pulmonary emphysema. There is no statistically significant difference in the values of the various groups. Note that eight of the ten patients with abnormally high $p\text{CO}_2$ values are in the nonulcer group and seven of these ten patients are in the normal acidity group.

pH values, high venous carbon dioxide combining power values and markedly reduced timed one second vital capacities in individual patients. No correlation could be made. Some of the patients with the highest gastric acidity had normal blood gas and pH values. Conversely, some of the patients with normal or even low gastric acidity had marked hypercapnia and respiratory acidosis as measured by the arterial blood pH and $p\text{CO}_2$ and the venous carbon dioxide combining power.

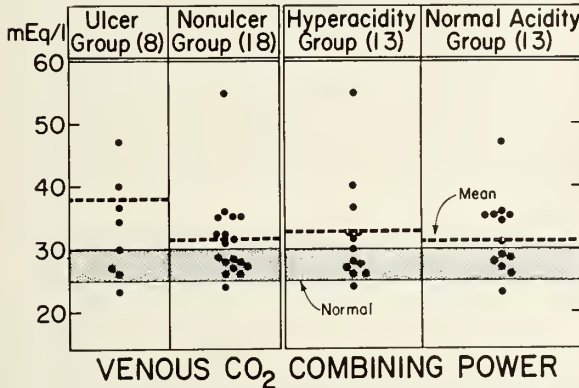


Figure 6. Chart showing the venous carbon dioxide combining power in various groups of patients with pulmonary emphysema. There is no statistically significant difference in the values of the various groups.

Discussion

The effect of hypercapnia on gastric secretion has been an intriguing problem for investigators for years. In 1932 Browne and Vineburg demonstrated that secretion from a total gastric pouch in dogs varied directly with the carbon dioxide combining power and was not affected by the blood pH. They also noted that gastric secretion produced by stimulation of the vagus nerve was inhibited by hyperventilation (hypocapnia) and restored by raising the carbon dioxide content of the inspired air. In 1950 Fürst, Langfeldt, and Mörsdahl studied the effect of hyperventilation and carbon dioxide inhalation on the gastric secretion of rats. They found that hypocapnia produced by hyperventilation resulted in a decreased volume and decreased hydrogen ion concentration in the gastric secretion. The administration of carbon dioxide to the rats caused a slight increase in the volume of gastric secretion, but no change in the hydrogen ion concentration. On the basis of these studies, Fürst, Langfeldt, and Mörsdahl suggested an upper and a lower limit for the appearance of the effect of carbon dioxide on gastric acid production—the upper limit depending on the total extent of the plasmotropic surface of the gastric oxyntic cells and the lower limit set by basic carbon dioxide production.

In other animal experiments Van Liere and Vaughan¹⁹ and Rickett and Van Liere²⁰ found that volume and acidity of secretions from Heidenhain and Pavlov pouches of dogs was reduced in anoxia. Bean *et al.*^{21, 22, 23} have shown that the splanchnic blood flow is increased by hypercapnia and anoxia and decreased by hypocapnia. This has led some investigators²⁴ to consider the theory that increased splanchnic blood flow is one of the factors responsible for hyperacidity and peptic ulceration in patients with pulmonary emphysema.

Several clinical investigations of man have been done in an effort to detect a mechanism to explain the high association of peptic ulceration and pulmonary emphysema. In 1930 Apperly²⁵ reported the incidence of peptic ulcer was four times greater in the population of the cooler parts of Australia than in the population of the warmer regions. Later, Nye and Sippe postulated that hyperventilation produced by the warmer climate caused a relative hypocapnia with subsequent lessening of gastric acid production and a lower incidence of peptic ulcer in this area. In 1931, Apperly and Crabtree²⁷ in a study of 18 healthy men found a direct correlation between the degree of gastric acidity and the arterial blood bicarbonate irrespective of the blood pH. They postulated that the increased blood bicarbonate displaced chloride ion and made it more available for utilization in the production of hydrochloric acid in the stomach. In 1937 Kiefer found that the elevation of the plasma carbon dioxide content by alkali administration was not associated with a significant alteration of the gastric secretion. However, it should be noted that this resulted in a metabolic alkalosis instead of a respiratory acidosis as occurs in patients with pulmonary emphysema even though comparable plasma carbon dioxide levels were produced.

More recent clinical studies have not demonstrated a significant correlation between gastric acidity and blood carbon dioxide values in patients with pulmonary emphysema. In 1959 Silen, Brown, and Eisman¹⁴ studied 20 patients with pulmonary emphysema. Twelve-hour nocturnal gastric aspirations were performed and the patients divided into two groups depending upon whether they produced more or less than 18 mEq. of acid during the 12-hour period. Silen and his group found no correlation between acid production and the venous carbon dioxide combining power, total vital capacity, or the timed one second vital capacity. However, there was a significantly greater reduction of the maximum breathing capacity in the group that produced more than 18 mEq. of acid in the 12-hour period. In 1960 Zasly, Baum, and Rumball¹⁰ studied 30 patients with pulmonary emphysema. Arterial blood was taken from an indwelling needle for pH, $p\text{CO}_2$ and $p\text{O}_2$ deter-

minations while gastric secretion was obtained by continuous section. Carbon dioxide inhalations were given to some of the patients during the collection period. Zasly's group found no significant correlation between the pH of the gastric juice and the arterial blood pH, $p\text{CO}_2$ or $p\text{O}_2$. Furthermore there was no significant alteration of gastric pH during carbon dioxide inhalations. However, it is to be noted that the patients with pulmonary emphysema did have a significantly lower gastric pH than did a control group studied simultaneously. Zasly concludes that there is no evidence supporting the hypothesis that carbon dioxide retention was a factor in the increased incidence of peptic ulceration in patients with pulmonary emphysema.

In a study of two healthy normals, Naitove and Tenney demonstrated that hypercapnia increased and hypocapnia reduced gastric secretion following a test meal. The amount of acid secreted at any given carbon dioxide tension was found to increase as the accompanying oxygen tension decreased.

Several authors^{4, 6, 7, 8, 11, 12, 15} have implicated "stress" with a resultant increased adrenocortical secretion resulting in gastric hyperacidity as the cause of peptic ulceration in patients with pulmonary emphysema. Recently, Sjaastad *et al.* found normal plasma steroid levels in patients with chronic lung disease and concluded that the increased ulcer incidence was not due to stress-induced hyperadrenocorticism.

The present study was designed to see if there was any correlation between respiratory acidosis and the basal gastric acidity as well as the maximum gastric acid output after betazole hydrochloride stimulation. As can be seen from the results of this study, no correlation was found between these values. It is apparent that patients with pulmonary emphysema have a high incidence of peptic ulcer as well as gastric hyperacidity. However, some other mechanism besides hypercapnia and acidosis must be considered to explain this association.

References

1. Green, P. T., and Dundee, J. C.: The Association of Chronic Pulmonary Emphysema With Chronic Peptic Ulceration. *Canad. Med. Assoc. J.*, 67:438, 1952.
2. Fulton, R. M.: The Heart in Chronic Pulmonary Emphysema. *Quart. J. Med.*, 22:43, 1953.
3. Latt, E. M., Cummins, J. F., and Zieve, L.: Peptic Ulcer and Pulmonary Emphysema. *Arch. Int. Med.*, 97:576, 1956.
4. Lowell, F. C., Franklin, W., Michelson, A. L., and Schiller, I. W.: A Note on the Association of Emphysema, Peptic Ulcer, and Smoking. *New Eng. J. Med.*, 254:123, 1956.
5. Plotkin, Z.: The Syndrome of Gastroduodenal Disease Associated With Chronic Cor Pulmonale. *Dis. Chest*, 31:195, 1957.
6. Flint, F. J., and Warrack, A. J. N.: Acute Peptic Ulceration in Emphysema. *Lancet*, 2:178, 1958.
7. Silen, W., Eiseman, B., and Brown, W.: Peptic Ulcer and Pulmonary Emphysema. *Amer. Rev. Resp. Dis.*, 80:155, 1959.
8. Menguy, R., Compton, M., and Comroe, J. H., Jr.: Chronic Emphysema and Cor Pulmonale With Perforation of Duodenal Ulcer. *J. Okla. State Med. Assoc.*, 52:315, 1959.
9. Platts, M. M.: Peptic Ulceration and Gastric Acid Secretion in Patients With Chronic Respiratory Acidosis. *Gastroenterol.*, 38:317, 1960.
10. Zasly, L., Baum, G. L., and Rumball, J. M.: The Incidence of Peptic Ulceration in Chronic Obstructive Pulmonary Emphysema. *Dis. Chest*, 37:400, 1960.
11. Sjaastad, O. M., Brown, H., Cohn, J. E., West, C. D., and Kumagai, L. F.: Adrenocortical Function in Chronic Pulmonary Disease. *New Eng. J. Med.*, 266:801, 1962.
12. Cohen, A. C., and Jenney, F. S.: The Frequency of Peptic Ulcer in Patients With Chronic Pulmonary Emphysema. *Amer. Rev. Resp. Dis.*, 85:130, 1962.
13. Wilbur, D. L., and Ochsner, H. C.: The Association of Polycythemia Vera and Peptic Ulcer. *Ann. Int. Med.*, 8:1667, 1935.
14. Silen, W., Brown, W. H., and Eiseman, B.: Peptic Ulcer and Pulmonary Emphysema. *Arch. Surg.*, 78:897, 1959.
15. Wolf, S., and Wolff, H. G.: Human Gastric Function, New York, Oxford University Press, 1947, p. 139.
16. Bernard, E., Isreal, L., and Debris, M. M.: Role of Mucoviscidosis in Pathogenesis of the Association of Emphysema and Digestive Ulcers. *Presse Med.*, 70:861, 1962.
17. Browne, J. S. L., and Vineburg, A. M.: The Interdependence of Gastric Secretion and the Carbon Dioxide Content of the Blood. *J. Physiol.*, 75:345, 1932.
18. Fürst, V., Jr., Langfeldt, E., and Mörsstad, O.: The Importance of Carbon Dioxide in Blood for the Formation of Hydrochloric Acid in the Gastric Glands. *Acta Physiol. Scand.*, 21:278, 1950.
19. Van Liere, E. J., and Vaughan, P. E.: Basal Secretion of Pavlov Pouch Dogs as Influenced by Oxygen Want. *Am. J. Digest. Dis.*, 8:155, 1941.
20. Rickett, A. D., and Van Liere, E. J.: The Effect of Anoxia on Gastric Secretion From Pavlov and Heidenhain Pouch Dogs. *Am. J. Physiol.*, 127:637, 1939.
21. Mohamed, M. S., and Bean, J. W.: Local and General Alterations of Blood Carbon Dioxide and Influence of Intestinal Motility in Regulation of Intestinal Blood Flow. *Amer. J. Physiol.*, 167:413, 1951.
22. Bean, J. W., and Sidky, M. H.: Effects of Low Oxygen on Intestinal Blood Flow, Tonus, and Motility. *Amer. J. Physiol.*, 189:541, 1957.
23. Bean, J. W., and Sidky, M. H.: Intestinal Blood Flow as Influenced by Vascular and Motor Reactions to Acetylcholine and Carbon Dioxide. *Amer. J. Physiol.*, 194:512, 1958.
24. Naitove, A., and Tenney, S. M.: Effects of Hypoxia and Hypercapnia on Gastric Acid Secretion in Man. *Gastroenterol.*, 43:181, 1962.
25. Apperly, F. L.: The Possible Influence of Climate on the Incidence of Peptic Ulcer in Australia. *M. J. Australia*, 1:779, 1930.
26. Nye, L. J. J., and Sippe, C. H.: A Consideration of Achlorhydria With a Review of 100 Cases. *M. J. Australia*, 1:189, 1932.
27. Apperly, F. L., and Crabtree, M. G.: The Relation of Gastric Function to the Chemical Composition of the Blood. *J. Physiol.*, 73:331, 1931.
28. Kiefer, E. D.: The Interdependence of Gastric Secretion and the Carbon Dioxide Content of the Blood and Its Significance in the Alkali Treatment of Peptic Ulcer. *Am. J. Digest. Dis.*, 4:667, 1937.
29. Zasly, L., Baum, G. L., and Rumball, J. M.: A Study of Gastric Secretions in Chronic Obstructive Pulmonary Emphysema. *Dis. Chest*, 38:69, 1960.

The Psychiatric Consultation

What? When? and for What Purpose?

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THIS PAPER HAS A silent senior author whom we would like to credit, Dr. Fred McEwen. Last year, at the Reginoal College meeting in Emporia, Dr. Hall and I had a conversation with Dr. McEwen about psychiatry. He stated his belief that internists do not use psychiatrists enough; perhaps because they do not know which patients to refer, or what to expect from the referral. With his characteristic gentle wisdom and charm, he had committed us, before we left Emporia, to writing this paper. Dr. McEwen prompted the paper, but we are responsible for what follows.

During the past year, 428 patients were seen in consultation at the Menninger Clinic, approximately two consultations a day. Most of these patients were seen for one hour, others for two to ten hours. Many were self-referred, but a sizable number were referred by physicians. Of those patients referred by physicians, the referral was often made for help in hospitalizing the patient in a psychiatric hospital. The severity of the patient's illness and the need for hospitalization were grossly apparent to the referring physician, but he wanted the confirmation and help of the psychiatric consultant in effecting the hospitalization. This is certainly a clear-cut reason for the use of the psychiatric consultant and one way in which he can be of help to other physicians and their patients. But, we protest, this is a limited conception of the use of the psychiatric consultation.

Some physicians tell us that they have patients who certainly need to see a psychiatrist, but that the patient will not hear of such a referral. Some patients make the paradoxical remark, "I would like to go to the Menninger Clinic if I didn't have to see a psychiatrist," or the question is often asked early in the consultation hour, "Are you a doctor?" "Yes, I am." "Oh, good, I thought maybe you were a psychiatrist." Curiously enough, we have even had the experience of patients coming willingly in the role of a research subject to see a psychiatrist, but fearfully and stubbornly refusing to come as a patient. It is not unusual for physicians to refer patients to

Is it possible that some physicians have been led to expect themselves to be all-round psychiatrists and thus to be able to treat their patients' psychiatric problems themselves? Since World War II there have been militant efforts at postgraduate programs in psychiatry for all physicians, psychiatric teachings have been eagerly introduced into the medical curriculum, and many books and journal articles have been written—all directed at making every physician something of a psychiatrist.

These efforts to increase psychiatric resources are commendable, but it may well be that they have brought into their wake a side-effect that is highly undesirable. Some physicians have come to feel badgered by the implication that they should be psychiatrists in addition to what else they are doing. Others have been led to feel that to refer a patient to a psychiatrist is an admission that they are inept as physicians or they would be able to take care of the patient themselves.

Perhaps in our eagerness to muster help from our medical colleagues to take care of the thousands of people needing psychiatric care, we psychiatrists have failed to talk enough about the value for the patient of a consultation with a psychiatrist.

our Neurology and Neurosurgical Service as a back-door entrance to psychiatric help.

On occasion, the physician as well as the patient may be reluctant about a psychiatric consultation. The physician may be reluctant because he questions the value of a psychiatric consultation, or he may feel that he is expected to be something of a psychiatrist himself. He may even anticipate criticism for not having recognized signs of serious mental illness

* From the Adult Outpatient Services, The Menninger Foundation, Topeka, Kansas.

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earlier. We can understand this kind of concern for we are only too familiar with being told, as psychiatrists, that we neglect physical complaints and think everything is mental.

Before talking further about the reluctant psychiatric patient and the physician who is reluctant to refer for a psychiatric consultation, we would like to discuss three patients whose consultations with a psychiatrist illustrate not only some of the bases for this reluctance of both the referring physician and the patient, but also what the psychiatric consultation attempts to accomplish.

Patient A

A physician, father of a four-year-old girl, sought consultation when the child's demands on the mother's time became intolerable for the mother. He wanted to know how to proceed in getting relief from a trying situation in his home. The trouble started soon after the little girl came home from a week in the hospital where she had been under treatment and observation because of a seriously infected knee joint. The child had never been separated from the mother for such a long period before. While in the hospital, she appeared as an almost ideal patient, allowing the nurses to apply hot packs to the swollen knee and making few demands as she sat somewhat solemnly in her crib, occasionally looking at the picture books which her parents had brought her. Once at home, she asked that her mother come and stay with her a few minutes at bedtime. Initially this request was felt to be reasonable and her mother would go into the room and spend a few minutes with her, but as the days went by, the child began to demand more and more of the mother's time at bedtime. She would yell and scream if the mother would leave her bed before she had fallen asleep. Attempts to be firm with the child, to limit the time, to spank her when she became unreasonable, were of no avail and only worsened the situation. It was at this point that a psychiatric consultation was requested.

Within a week after the consultation, the symptoms began to subside and they disappeared completely after a period of about a month. What appeared to be magic had to do with the understanding conveyed to the father by the consultant that hospitalization and separation such as this little girl suffered often are experienced with intense feelings by children; feelings that have to do with the fear of being abandoned by the parents, feelings of hatred toward the parents who had allowed her to be alone and frightened. The parents were instructed to talk with the little girl, taking time to go into detail about the purpose of the hospitalization, the fact that it was not intended to make her feel bad or to punish her, that the parents loved her and would not

abandon her. Moreover, the little girl was encouraged to talk about the experience, the loneliness and the irritation that she had felt. Thus, a simple suggestion from the consultant was able to help things quite a bit.

Patient B

A 30-year-old stenographer was referred by her family physician because she had failed to recover from what was an otherwise successful operation for a herniated vertebral disc. The orthopedic surgeon had referred the patient back to her physician who had originally seen her for back pain, stating that the continuation of her severe back pain and her failure to become ambulatory after six months could not be explained on the basis of any failure of the surgery. The family doctor was becoming concerned because of the large amounts of opiates that the patient was taking for the pain; he was also unhappy about the fact that the patient was settling into a life of chronic invalidism, refusing to follow his orders for exercising. He felt that he had done all he could, and, moreover, was convinced that there were emotional factors playing an important part in the illness.

The patient came for psychiatric consultation under protest, saying that she was not crazy and blasting the doctors who had been treating her, saying that they wanted to get rid of her, that they had failed to give her the treatment she needed during the course of her illness, and that that was the reason she had not made a satisfactory recovery. We talked for several hours about her anger toward her doctors, her feeling that they had neglected her, were not concerned about her, and were now dumping her. She anticipated that her relationship to the psychiatrist would end up the same way as it had with the other doctors, and, indeed, she tried to bring this about.

As she reflected, however, she acknowledged that there could be a relationship between what had occurred in her past life and her present feelings, with her constant demands and refusal to tolerate even mild pain. She said it was not the first time in her life that she had been mistreated or neglected, and she complained bitterly as she related her feelings from the time that her father deserted the family when the patient was seven. She had come to a point in her life when she felt that she had the right to demand care and attention, the right to be loved and be taken care of in a way that she felt she had never gotten, had been cheated out of.

After six consultation hours over a period of six weeks, she had stopped taking opiates, complained less of back pain and was back at work.

She was pleased to be referred back to her family physician, acknowledging that he must have really

been concerned about her to have referred her for psychiatric consultation, and understanding that her physical illness had aroused old charged feelings that had temporarily got the best of her.

Patient C

More recently, we saw a 30-year-old bookkeeper who had had her first attack of multiple sclerosis following the birth of her fourth child. After she had recovered from the acute phase of her illness and was out of bed, she spoke to her family physician of feeling panicky, irritable with her husband, and mixed up in her feelings about her parents, who lived a few blocks away. She could not tolerate their constant indications of concern which she experienced as a kind of smothering and being treated like a child. She spoke of not being a good mother, felt that she could not be a satisfactory wife to her husband, and had thoughts of separation or divorce, and on occasion had thoughts of suicide. She was then referred for psychiatric consultation.

In the first interview, as the patient spoke of her difficulties with her husband, with the children, and with her parents, she never once mentioned any awareness that these problems were related to her feelings about having multiple sclerosis. When she was asked directly how she felt about the fact that she had multiple sclerosis and what she saw for herself in the future, she sat up stiffly in her chair, sobered, and her lips became tight. She then broke down and cried for 30 minutes; at the same time she talked of her fright about the future, her image of herself as a hopeless and helpless cripple. What was apparent was that she felt a great need for support, had a strong inclination to want to be completely dependent upon her parents again, to know that they would take care of her and protect her, while another part of her simply would not give in to such a solution.

The husband had many mixed feelings about what had happened to his wife and to his marriage. He felt frightened by the prospects of an invalid wife; even though he loved her, he wondered if he had the strength to live with the uncertainties that a diagnosis of multiple sclerosis carries with it. Over a period of ten weeks, seeing them once a week, we believe that we helped this couple to see their situation more realistically, to see the choices they had to make, so that they could decide how to plan for the years that they have together, however many or however few they may be.

The Consultant's Report

Like any other consultant, the psychiatrist may have a great deal, or he may have very little to offer for an individual patient. But if you will grant us the assumption that the psychiatric consultation can

be helpful, then we can ask why are not more referrals made for psychiatric consultations?

We have observed that the reluctant psychiatric patient often has a physician who is himself reluctant about psychiatry and what it has to offer his patients. He may have known the patient over a period of years and may even have known the patient's family. He wonders what can be learned about the patient in one hour that he does not already know.

And then there is the problem of the psychiatrist's report. It is our impression that a great many physicians grumble to themselves about the lack of help they have received from psychiatric reports. And psychiatrists must take a great deal of responsibility for this state of affairs. Psychiatrists as a group are charged with using jargon that is not commonly understood by other physicians. This appears to be a human failing, to cloud the issue by using technical words, rather than simply saying, "I don't know."

Like all physicians, we hope our reports are understandable. But, despite our efforts to write understandable reports, we sometimes hear from an unhappy physician that one of our staff saw one of his patients and reported to him that the patient had "schizophrenia" or "an unresolved oedipal complex." Few referring physicians, in our experience, are interested only in a diagnostic label, or a technical formulation of the patient's symptomatology. They want to know what the diagnosis means, and they are interested in what can be done for the patient.

We psychiatrists must also take responsibility for a tendency to end our reports by saying, "We are sorry, but we do not have time at present to continue seeing your patient in treatment." Maybe we do not have time, or maybe the patient cannot afford private care, but, in our opinion, the psychiatrist has the responsibility to assist the patient and the referring physician in finding someone who can treat the patient. Returning the patient to the referring physician with a starched report of understanding of the patient's illness, but limp on doing something about it, probably stops further referrals to that psychiatrist, and perhaps that experience with a psychiatrist sours the referring physician on the value of a psychiatric consultation.

In their effort to treat their patients thoroughly, psychiatrists tend to fill their schedules with patients who need to be seen regularly. This fact has an unfortunate result—the psychiatrist may be left with little or no time for consultation work. A call to a psychiatrist's office by a referring physician is probably not repeated after learning that the patient can be seen three months from next Tuesday.

It is our conviction that the time demanded for each individual patient in the present practice of psychiatry tends to limit the use of the psychiatrist as a useful consultant to other physicians and their patients.

There appears to be an ever increasing number of people who want help with emotional problems. And we know that it is important to provide them with that help early and, by so doing, better insure an optimistic prognosis rather than a poor one. But there are not enough psychiatrists to do the job. We know that there are many more patients who need psychiatric help than those seen by psychiatrists and that other physicians are trying to help them. And perhaps it is out of guilt, in part at least, that psychiatrists have helped to marshal all physicians to develop their skills as psychiatrists, even to the point of trying to convince some physicians that they are psychiatrists. A well-trained psychiatrist knows better; he knows he is not an internist because he is not trained as an internist, and when a psychiatrist gets a bellyache he will be the first to seek out the best-trained internist in town.

Physicians have been encouraged *ad nauseam* to listen to their patients, this allegedly being what psychiatrists do. As a matter of fact, psychiatrists do a lot of other things besides listen. Of course it is important to listen to one's patient, but we all learned that in our elementary course in physical diagnosis.

Listening is a transitive process and it takes some hard training to know what to do with what one hears from an emotionally troubled person. Psychiatrists, in trying to teach psychiatric skills, may have unwittingly given the impression that these skills are easily acquired. They are not. It takes a long time and specialized training to develop a skilled internist, and it takes a long time and specialized training to develop a skilled psychiatrist.

It is no more sound medicine for a psychiatrist to prescribe aspirin gr. \bar{x} t.i.d. over a period of weeks for a low grade fever without attempting to unearth the etiology, than it is for an internist to listen to a recital of a patient's emotional symptoms over a period of weeks without attempting to delineate the most relevant and immediate emotional conflicts. In both instances there is the danger of an acute decompensation, or the danger of masking severe pathology and eventual structural damage that may not become evident until months or even years later.

To elaborate further on the consultant's report, it should help the referring physician to understand the seriousness of the patient's illness and to some extent the nature of the underlying conflicts which are producing the symptoms. It should indicate the course of action as well as the resources that are necessary and available to carry through with the proper treatment. This may involve a more complete psychiatric study, additional interviews, psychological tests, or other special laboratory tests. It may involve participation of a close member of the patient's family who can provide historical material, as well as

a person to support the patient and to help carry through with the recommendations. Perhaps the referring physician will be in the best position to continue with the patient, or perhaps the consultant will continue with the patient, but the consultant should be prepared to provide the referring physician with the names of appropriate hospital facilities if indicated, as well as the location of appropriate outpatient clinics, private psychiatrists, or whatever other facilities will be helpful to the patient.

The case histories that we have presented illustrate some of the more common reasons for referral: to provide help to a relative who does not know how to cope with emotional problems in another member of his family, or to evaluate the danger of suicide; problems with addiction; the patient who defeats his wish for help by stubbornly refusing to carry out his physician's orders; there are problems of differential diagnosis in which emotional tensions may be complicating physical symptomatology. Needless to say, any such list of patients for whom a psychiatric consultation might be helpful would include the grossly maladjusted, the patients with severe sexual pathology, or those who can't refrain from injuring others. There are also those unfortunate people who are addicted to surgery, and those unhappy and lonely and inhibited people who withdraw from others, who find life a burden rather than a pleasure, and many, many others. It is impossible to list them all.

Thus far we have neglected to talk about something that is obvious to everyone. All of us as physicians regularly refer our patients to various specialists when the need arises. And, characteristically, the referral is made to a physician we know personally. The internist will refer his patients to the psychiatrist in whom he has confidence. Another aspect of the unfortunate isolation of psychiatrists from other physicians is that most physicians do not have the opportunity for "Doctor's Room" talk with psychiatrists as they do have with other physicians. Perhaps the best way a psychiatrist can be of help to other physicians is to be available, at least by phone, to talk about a patient.

Psychiatrists from experience are well aware of the difficulty of helping some patients to accept the fact that they have emotional problems. This must be a problem that confronts other physicians nearly every day. Here a telephone conversation with a psychiatrist may be helpful in assisting the patient to accept a psychiatric referral.

As physicians, we are all committed to comprehensive medical care for all our patients. To put this medical ideal into practice will require an increased use of the psychiatric consultation and a greater availability and facility on the part of psychiatrists.



Cough, Diarrhea, Dehydration and Shock

Case Presentation

THE FIRST KUMC ADMISSION for this 70-year-old man was on December 10, 1962, with a complaint of "pneumonia for one month."

He had been admitted to his local hospital about one month earlier because of cough and fever. The patient was not able to give a history, but his brother-in-law said that he had lost about 25 pounds in the past year. A few months before his admission he had developed a non-productive cough and immediately before his first hospitalization he complained of difficulty in getting his breath, tightness of his chest, fever, and loss of appetite. There was no history of hemoptysis, chills, purulent sputum or sweats. The patient had been taking dexamethasone, vitamin B complex and probably various antibiotics before his admission.

An adequate medical history could not be obtained.

The patient was married, but had no children. He owned a liquor store. His wife was hospitalized in the local hospital at the time of the patient's admission here. He had been a heavy smoker in the past, and had been a heavy drinker, usually drinking wine. The patient had two brothers and four sisters; only two of these were living, the others having died at advanced age of unknown causes. There was no history of tuberculosis, cancer or diabetes in the family.

A review of systems could not be obtained from the patient, but the brother-in-law said that he had not complained of anything in recent months.

The patient was an elderly white man who was in acute respiratory distress. He was pale with cool, cyanotic extremities. The skin was dry and had poor

turgor. The pulse rate was 120 per minute and rhythmic. The systolic blood pressure was palpable at 80; no diastolic pressure could be obtained. The respiratory rate was 36 per minute and respiration was quite deep. The patient was edentulous and his mouth was dry. There was a moderate increase in the anterior-posterior diameter of the chest. There were no inspiratory rales, but there were moist expiratory rales. The chest could not be percussed adequately because the patient could not be put in the sitting position. The heart sounds were distant. The radial pulses were barely palpable, and no pulses could be felt below the femorals. The abdomen was distended. There was no fluid wave, and no masses or organs could be felt. There were no bowel sounds. The patient was incontinent of light brown, watery feces. There were no hemorrhoids. The prostate was not felt, but there was extensive, diffuse polypoid tissue over the entire area of the rectum.

The white count was 94,000 with 86 per cent neutrophils (47 per cent filamented and 39 per cent nonfilamented), 4 per cent monocytes, 6 per cent metamyelocytes, and 3 per cent myelocytes. The hemoglobin was 17.1 grams per cent, and the hematocrit was 53 ml. per cent. The BUN was 33 mg. per cent; blood sugar, 108 mg. per cent with intravenous glucose running; CO_2 , 18 mEq.; sodium, 127 mEq.; potassium, 3.4 mEq.; and chloride 75 mEq. per liter. The serum acetone was negative. Three blood cultures were negative.

The patient was dehydrated and in profound shock at the time of his arrival at the University of Kansas Medical Center. An intravenous solution of five per cent dextrose in water was started at once, and he was given 100 mg. of hydrocortisone intravenously. He was catheterized but there was only 5 ml. of dark, cloudy urine in the bladder. Metaraminol was added to the intravenous solution, and this maintained the systolic blood pressure at about 120 mm. for a time, but later the blood pressure began to fall. The patient

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was then given a liter of 2½ per cent dextrose and half physiological saline containing antibiotics to be followed by a liter of physiological saline. He continued to have profuse diarrhea of watery, brown feces. There was essentially no urine output during his hospitalization. He deteriorated rapidly with progressive hypotension, and expired quietly ten hours following his admission.

Thomas Brady (student):* Were the informants accurate historians, and is there any other information concerning the length of smoking and any recent changes or excessive alcohol intake?

Dr. Barbara Lukert (resident in medicine): The informants were his brother-in-law and his sister. They were of Italian extraction. They had not been living with the patient, and his wife was not here for questioning. He had been drinking up until the time of his hospitalization at the local hospital.

Jay Kent (student): Is there any history of delirium tremens, melena, jaundice or emphysema?

Dr. Barbara Lukert: No, there was not.

Kelmar Burge (student): Can you give us a description of this man's fever course before and during his hospitalization in his home community?

Dr. Barbara Lukert: We do not know anything about his fever course in the other hospital.

H. Douglas Jones (student): Could you tell us about the duration of this man's diarrhea or changes in bowel habits before his admission here?

Dr. Barbara Lukert: As far as we know his diarrhea started two days before his admission here while he was in the local hospital.

H. Douglas Jones: Could the patient have been in contact with any form of infectious diarrhea before his hospitalization here?

Dr. Barbara Lukert: Not that we are aware of.

Richard Meils (student): Were there any tests done on the feces, namely gram stain, culture, or a guaiac?

Dr. Barbara Lukert: No, there were not.

David McGhee (student): Was a platelet count done?

Dr. Barbara Lukert: No, it was not, but on the smear they were reported as being adequate.

Garry Owen (student): What was the patient's temperature course while he was in the hospital here?

Dr. Barbara Lukert: As far as I can remember he was afebrile.

Thomas Brady: Was this man catheterized?

Dr. Barbara Lukert: Not as far as we know.

Jay Kent: May we have a description of the rectal findings, and a better description of the stool, particularly whether white, flaky material, mucus or blood were ever seen?

Dr. Barbara Lukert: Blood and mucus were not seen. The stools were quite watery. They were light brown. On rectal examination this was just a polypoid feeling rectum which was diffusely polypoid. It was a nobby feeling mucosa.

Kelmar Burge (student): Could we have a description of the man's general appearance?

Dr. Barbara Lukert: He was in shock, and he was cyanotic. I think he probably weighed about 160 pounds. He was not emaciated.

Kelmar Burge (student): Was he comatose when he was admitted?

Dr. Barbara Lukert: No.

H. Douglas Jones: Could you give us a more accurate history concerning the length of time the patient had been on corticoids and antibiotics, and the route of the administration of these drugs, especially the corticoids?

Dr. Barbara Lukert: We do not know that. I think his corticoids were given orally, but the doctor could not give us a real time sequence.

Dr. Delp: You do not think he had been getting the corticoids for as long as a month?

Dr. Barbara Lukert: No, I do not think so.

Dr. Delp: Then you think he had been getting them for a shorter period of time?

Dr. Barbara Lukert: Yes.

Dr. Delp: We assume he had been getting several antibiotics for a month, but we do not know which ones.

Richard Meils: Were skin tests done, and if so what were the results?

Dr. Barbara Lukert: We do not know of skin tests having been done at the other hospital, and there was not enough time for us to complete them.

David McGhee: Did he bring any x-rays in with him?

Dr. Barbara Lukert: Yes, he did.

David McGhee: Could you give us a better description of this patient's chest findings upon admission, specifically in regard to expiratory rales?

Dr. Barbara Lukert: There were no inspiratory rales, just crackling rales on expiration.

David McGhee: What were the results of percussion?

Dr. Barbara Lukert: He could not be adequately percussed because he was in such profound shock.

Dr. Delp: Was he ventilating properly, Dr. Lukert?

Dr. Barbara Lukert: Yes, he was breathing very deeply, but he did not appear to have any obstruction to respiration.

Garry Owen: What were the neurological findings? Was there any evidence of meningismus?

Dr. Barbara Lukert: He was comatose, but his reflexes were normal. There was no meningismus. He would open his eyes on painful stimuli.

* Although a student at the time of the conference in April, 1963, he like the others referred to as students, received the M.D. degree in June, 1963.

Thomas Brady: Was there anything unusual noted about the odor of his breath?

Dr. Barbara Lukert: No.

Dr. Delp: All right, Mr. Kent, please demonstrate the electrocardiogram.

Electrocardiogram

Mr. Kent: We have one EKG to show (*Figure 1*). It shows sinus tachycardia with a rate of about 150 per minute. There is ST segment depression, T wave flattening and terminal slurring of the R wave in leads 1, 2, aV1, V4, V5, and V6. There is poor progression of the R waves across the chest, and there is a deep S wave in V4R, V1, and V2. I interpret this tracing as showing a sinus tachycardia with ST segment changes and T wave changes suggestive of hypokalemia and myocardial ischemia. I also interpret the precordial findings as being suggestive of left ventricular hypertrophy.

Dr. Delp: Thank you, Mr. Kent. Mr. Burge, please demonstrate the x-rays.

X-Rays

These x-rays were taken here. The chest film (*Figure 2*) shows consolidation of the right upper lobe with a mediastinal shift to that side and a tracheal shift to the right side. There are diffuse hilar calcified densities compatible with calcified granulomatous nodes. Although it is not seen too well on the projection, there is a region which is very dense, very circumscribed and round, and suggests calcified lymph nodes. I interpret this chest x-ray as showing pneumonia of the right upper lobe with atelectatic



Figure 2. Chest film made on the day of admission.

changes demonstrated by the mediastinal shift to the right. The abdominal film (*Figure 3*) shows loops of bowel in a stepladder arrangement. The mucosal markings seem to be smoothed out. I interpret this as small bowel obstruction, but there is evidence of gas in the colon on the right. I do not see any other evidences of colon gas. My first interpretation of this film would be small bowel obstruction, probably of the ileum. I cannot, however, definitely rule out adynamic ileus because in early adynamic ileus one can get changes which are similar to this x-ray.

Dr. Delp: Dr. Germann?

Dr. Germann: First of all, these are both portable films and this does have some effect on their quality. There is some gas in the colon. There is not a lot, but there is some over on both the right and the left sides. This would imply that the colon is not obstructed. The layering of gas in the mid-portion of the abdomen ought to imply some ascites. I think this patient does have some free fluid in the peritoneal space and that probably this is an adynamic ileus. There are one or two points in the chest film that are rather important. The heart and upper mediastinum deviated a little bit to the right, as indicated by the previous discussor. If you take that into account the interlobar fissure makes an "S" sign, if you like, which is a rather important sign radiographically. If you do not know what it is I will tell you later. The upper lung does show some infiltrate. This is also the region of aspiration as you know. People

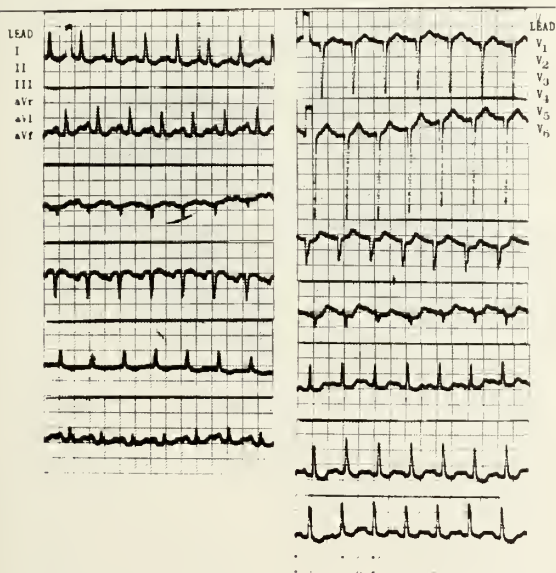


Figure 1. Electrocardiogram made on the day of admission.



Figure 3. Abdominal film made on the day of admission.

who are comatose may aspirate, and this is the usual location for inflammatory changes.

Dr. Delp: Thank you. Mr. Brady is going to give our discussion today and then subsequently I want to call on Dr. Ruth, Dr. Graham Calkins, and Dr. Liu.

Discussion

Mr. Brady: The case for today's discussion is that of a 70-year-old white man who was admitted to his local hospital with a history of a 25 pound weight loss for one year and a recent history of a nonproductive cough progressing to symptoms of dyspnea, tightness of the chest, fever and anorexia. He was treated with corticoids, vitamins, and antibiotics at his local hospital for one month before his admission here for infection of pulmonary origin. On the day of his death, he was transferred to K.U.M.C. where he presented with profound shock, diarrheal incontinence, symptoms of ileus, dehydration, expiratory rales and the finding of polypoid tissue in the rectum. In his brief hospital course his diarrhea was profuse, his hypotension was progressive, and he was anuric. After several hours of hypotension refractory to treatment he expired. We choose to base our differential diagnosis on symptoms of weight loss, cough, fever, anorexia, diarrhea, leucocytosis, and refractory shock.

As much as we would like to relate this patient's entire course to one disease entity, we find this to be an untenable proposition. Overriding the law of

parsimony, we feel that the patient's course is better explained by two separate disorders. At a cursory glance it would seem that early chronic myelogenous leukemia is a strong possibility in view of the neutrophilic leukocytosis with immature forms, a history of weight loss, fever and pneumonia, but patients with myelocytic leukemia usually have increased eosinophils and basophils associated with blast forms and progranulocytes. The lack of anemia, thrombocytopenia, lymphadenopathy, splenomegaly, and hepatomegaly are against this diagnosis. We believe this patient has a neutrophilic, leukemoid reaction. We base this impression on the findings of increased immature metamyelocytes and bands with a leukocytosis of 94,000. Leukemoid reactions have been reported due to infections of nearly every known organism, drug intoxications, malignancy, and severe hemorrhages. Most leukemoid reactions are seen in malignancy, with carcinoma of the lung and stomach being most frequent. There was an incidence of two per cent in one series of 160 cases of bronchogenic carcinoma. This may help to explain our patient's leucocytosis. In a 70-year-old man with a history of heavy smoking and with symptoms such as our patient presented, carcinoma of the lung must be a prime consideration. Frequently carcinoma of the lung is insidious in onset, and it may present with nothing more than a cough. Later symptoms may include hemoptysis, wheezing, weight loss, anorexia, chest pain, pleural effusion and hyperpnea. Obstructive pneumonitis which may be refractory to antibiotic therapy is reported in as many as 60 per cent of carcinoma of the lung and could explain our patient's symptoms. Leukemoid reactions are reported to occur in carcinoma of the lung with or without bony metastasis. In approximately 40 per cent of patients with asymptomatic carcinoma of the lung no radiologic diagnostic findings are demonstrated.

Tuberculosis, with its protean symptomatology and often insidious pulmonary manifestations, offers an interesting explanation for the patient's entire clinical picture. The lack of a history of exposure, productive sputum, chills and sweats and positive skin tests together with the fulminant course discourage this diagnosis, but do not exclude it. One of the most frequently described bacterial infections causing a leukemoid reaction is tuberculosis. It is further interesting to incriminate tuberculous enteritis as the cause of the patient's diarrhea. The acute onset of the patient's intestinal symptoms helps to rule out tuberculous disease. Bearing in mind the history of corticoid medication, we hope we are looking at the patient's symptoms as the referring physician did and not as the tubercle bacillus would. We also rule out histoplasmosis and exotic diseases such as sarcoid, Wegener's granulomatosis, interstitial pulmonary fibrosis, periarteritis nodosa, and pulmonary adenoma-

tosis on the basis of an atypical clinical picture, the lack of associated symptoms, and the lack of supporting laboratory and x-ray data.

The lack of a history of hematemesis, melena, jaundice, and hepatosplenomegaly together with incompatible physical signs militate against a diagnosis of chronic liver disease. On the other hand, a strong alcoholic history prior to admission here suggests chronic liver disease, probably cirrhosis with the not uncommon development of a respiratory infection refractory to antibiotic therapy with a subsequent development of complications to this antibiotic therapy. We cannot entirely rule this out, but we think we have a more likely diagnosis.

Mediastinal masses such as thymomas, neurofibromas, leiomyomas, gangliomas, teratomas, lymphomas, lymphocytomas, and Hodgkin's disease can account for many of our patient's symptoms, but these may be ruled out by lack of typical x-ray findings and compatible laboratory data. The findings of diarrhea, ileus, dehydration and rectal polypoid tissue strongly incriminate a second disease process in this patient. Intestinal infarction, with or without vascular occlusion, must be considered. It could be secondary to hypotension, especially in a 70-year-old patient with probable arteriosclerotic narrowing of the mesenteric vessels. This diagnosis is ruled out by the absence of a history of severe abdominal pain, tenderness, guarding, and a better diagnosis.

The presence of nondescript polypoid tissue strongly suggests rectal carcinoma. Rectal carcinoma metastasizes to the lungs via the lymphatics in approximately 20 per cent of the cases, but it is unusual for the metastatic lesion to cause symptoms initially. Carcinoma of the rectum most often presents as a gradual change in bowel habits, usually constipation and decrease in the caliber of the stools, but diarrhea also occurs. Lower abdominal and rectal pain, tenesmus, blood in the stools, and anemia are also common presenting complaints. Seventy-five per cent of deaths from carcinoma of the colon and rectum are a result of local persistence of the growth; 50 per cent of these from intestinal obstruction. The rapid onset of the ileus, the profuse fluid loss, and the shock without previous symptoms related to the gastrointestinal tract make this diagnosis less likely. Mucus secreting villus adenoma and adenocarcinoma of the rectum have been reported which present with profuse diarrhea, dehydration, and circulatory collapse. Rectal bleeding, pain, and pseudodiarrhea usually precede the onset of dehydration and impending shock for weeks or months. We feel that the rarity of this lesion (as evidenced by only 22 reported cases) and absence of previous gastrointestinal complaints rule out this diagnosis.

There remains a plausible explanation for the rectal findings. Everything from thrombosed hemor-

rhoids to hypertrophied rectal papilli have been considered. We feel that the confluent, elevated, nodular, edematous mucosa seen in pseudomembranous enterocolitis best explains the rectal findings. Pseudomembranous enterocolitis chiefly follows intra-abdominal surgical procedures, although in the last decade this disease has been seen with increasing frequency following antibiotic therapy. The signs and symptoms are profuse watery diarrhea, fever, leucocytosis, ileus, and dehydration. Peripheral vascular collapse supervenes early in the course, as the result of the loss of large quantities of water and electrolytes into the bowel. The proposed mechanism of this entity is not clearly defined. One hypothesis asserts that a relative hypotension produces capillary thrombosis leading to necrosis of the intestinal mucosa thereby allowing an overgrowth of pathogenic bacteria with a subsequent toxemia. A second hypothesis states that the primary insult is one of alteration of the normal flora by antibiotics allowing an uninhibited growth of the antibiotic resistant strains, frequently staphylococcus aureus although other pathogens have been reported. The overgrowth of the pathogens leads to bowel necrosis by direct invasion of the bowel wall and from intercapillary thrombosis following capillary dilatation produced by the enterotoxin.

In conclusion, I feel that the most likely primary diagnosis in this patient is bronchogenic carcinoma presenting as lobar pneumonia which was treated by corticoids and antibiotics. I further speculate that this patient then developed a complication of this therapy resulting in pseudomembranous enterocolitis with ileus, diarrhea, metabolic acidosis, dehydration and irreversible shock resulting in death.

Dr. Delp: Thank you Mr. Brady. Your diagnosis, Mr. Owen?

Garry Owen: Lobar pneumonia complicated by pseudomembranous enterocolitis.

Dr. Delp: Mr. McGhee?

David McGhee: The same.

Dr. Delp: Mr. Meils?

Richard Meils: Carcinoma of the lung with secondary pseudomembranous enterocolitis.

Dr. Delp: Mr. Jones?

H. Douglas Jones: Not only pneumonia but secondary pseudomembranous enterocolitis.

Dr. Delp: Mr. Kent?

Jay Kent: I agree with Jones.

Dr. Delp: Mr. Owen, do you think the man had carcinoma of the lung?

Garry Owen: No.

Dr. Delp: What do you think was the immediate cause of death, Owen?

Garry Owen: Circulatory collapse.

Dr. Delp: Jones?

H. Douglas Jones: Gram negative hypotension and refractory shock.

Dr. Delp: What about an explanation for that hemoglobin of 17 grams and a white count of 94,000, Owen?

Garry Owen: I believe the hemoglobin was due to hemoconcentration, and the elevated white count was due to a leukemoid reaction.

Dr. Delp: Jones?

H. Douglas Jones: This man had chronic lung disease that could have been responsible, but I think that we really must say that most of it was due to hemoconcentration.

Dr. Delp: Owen, they spoke about this man's breathing. It is a little difficult to say whether he was hyperventilating, whether he was hyperpneic or whether he was dyspneic. At least he had a respiratory rate between 36 and 40. What is your explanation for this?

Garry Owen: I think it was secondary to his severe shock.

Dr. Delp: McGhee?

David McGhee: Metabolic acidosis. The CO_2 was 18.

Dr. Delp: I notice on the laboratory sheet that the man had a blood sugar of 630 mg. per cent and one of 180 per cent. What is your comment, Owen?

Garry Owen: I imagine he was receiving intravenous glucose on the first occasion. A low potassium such as this man had might result in a higher sugar than one would expect to see.

Dr. Delp: Well, he had a blood potassium of 3.4. Is that low?

Garry Owen: I think that it was lower than this reflects because of the dehydration and hemoconcentration.

Dr. Delp: He had a chloride of 75 mEq. and a sodium of 127 mEq. per liter. Any comments about those, Burge?

Kelmar Burge: I think this is explainable on the basis of his diarrhea regardless of what the cause was. This was really a profuse diarrhea. With severe loss of the sodium, chloride and bicarbonate, lesser degrees of potassium loss occurs.

Dr. Delp: What was the etiology and pathogenesis of this man's shock, Owen?

Garry Owen: I believe it is due to the effusion of fluid and electrolytes into his gastrointestinal tract.

Dr. Delp: Mr. Brady?

Thomas Brady: I think it was due to dehydration; possibly also due to gram negative shock or pseudomembranous enterocolitis.

Dr. Delp: He received a number of vasopressors. Kent, would you comment?

Jay Kent: I do not think that vasopressors would have done any good in this man. He was in irreversible shock when he came in.

Dr. Delp: Jones, any comments?

H. Douglas Jones: I think that this man originally started out with staphylococcal pseudomembranous enterocolitis; and I think secondary to that he might have gotten a gram negative septicemia which frequently causes hypotension that is refractive to vasopressors.

Dr. Delp: Let us have some suggestions as to how the management might have been conducted so that the course of the illness might have been altered, assuming that it could have been altered.

Thomas Brady: I find that a hard assumption to make.

Dr. Delp: McGhee?

David McGhee: I think initially he should have been given more antibiotics.

Dr. Delp: Antibiotics! What kind? He had been receiving antibiotics.

David McGhee: I was thinking more of chloramphenicol. Also, on the line of antibiotics, a change of the antibiotic therapy has been known to be beneficial.

Dr. Delp: Jones?

H. Douglas Jones: I really do not know how fast the intravenous fluid was given, but I think I would have been inclined to treat gram negative septicemia by using intravenous chloramphenicol, hydrocortisone, and saline given rapidly. I think this man was severely dehydrated.

Dr. Delp: Burge?

Kelmar Burge: I wonder whether this man came from his original hospital in a rather long ambulance ride in shock with no intravenous running. Of course this has no bearing on our treatment of the patient here, but I think a lot could have been done for him had he been given fluid infusions during his ambulance ride. I think that the irreversibility of his hypotension could be due to a great extent on the length of time he was hypotensive, and since he was hypotensive for a period of what we can assume to have been several hours, the shock may have been completely irreversible by the time he got here.

Dr. Delp: Meils?

Richard Meils: I would change one thing. On admission he was given 5 per cent dextrose. I would have started saline on this man at that time and I would have pushed fluid.

Dr. Delp: Kent?

Jay Kent: I think he might have had plasma as well.

Dr. Delp: Dr. Ruth, may we have your comments?

Dr. William E. Ruth (internist): From the clinical viewpoint I think Dr. Lukert perhaps underplayed the protocol in terms of what her patient looked like when he arrived from the emergency room. This man had been in a state of shock for no less than 15 hours by the time he arrived here. Our clinical diagnosis as

we worked, as we saw the chest x-ray, and from what had been learned from his previous hospitalization was that this man did have carcinoma of the lung. So far as we could tell there were three possible explanations for his shock. Because of the fact that he was hyperventilating quite severely he had a CO_2 of only 18. We considered one of the very likely possibilities that this man had a gram negative bacteremia which was complicating his course, and for this reason I think Dr. Lukert chose large doses of antibiotics appropriately directed. The other possibilities remained, as we learned later, that this man had been on large doses of corticoids. Finally the possibility of massive loss of fluid into his gut. We could only make an estimate at replacement. So our clinical diagnosis, first, that the man had a carcinoma of the lung, secondarily his illness was complicated by an acute gram negative bacterial episode.

Dr. Delp: Dr. Calkins?

Dr. W. Graham Calkins (internist): I think this man had two diseases, and I think his primary disease was tuberculosis on the basis of his recent history of cough and fever and x-ray evidence of a large infiltrate in his right upper lobe. Perhaps one thing that makes me think this was that this man was given corticoid and then went ahead and died. It makes me wonder whether he had some dissemination of his primary tuberculosis that went on to involve the reticuloendothelial system causing a leukemoid reaction and also spread to involving the gastrointestinal tract. Now I think this man was very deficient in electrolytes as is evidenced by the low values of the sodium and chloride. He was markedly dehydrated as evidenced by hemoglobin and hematocrit. I do not think the statement would be in the protocol about the polypoid tissue in the area of the rectum unless it was awfully significant. I do not think it would be written this way if it were hemorrhoids or hypertrophied rectal papilli. So I am going to say that this man had a villus adenoma of the rectum. And, as has been mentioned, these people can lose tremendous amounts of electrolytes through this lesion whether it is a benign lesion or a malignant one (and about 25 per cent of them are malignant). There have been several cases reported in which these people have presented to emergency rooms in a shock-like state and have died in a manner similar to this man. It is really electrolyte imbalance and hypovolemic shock. He had evidence of ascites on his film of the abdomen. I think it possibly could be due to tuberculous peritonitis or it could be due to metastases from a malignant villus adenoma of the rectum.

Dr. Delp: Dr. Liu?

Dr. Chien Liu (clinical microbiologist): I would postulate that the lung disease was a carcino-

ma. I would think that if the patient had been sick for a month with tuberculosis and had been deteriorating there would probably have been x-ray or other signs. As to the three blood cultures, it seems to at least rule out some aerobic bacteremia, but we have to bear in mind that bacteroides is quite common in the intestinal tract and this is a strict anaerobic organism which is not found unless you look for it. It is a very slow growing organism, and sometimes takes from four to fourteen days before the blood culture becomes positive. This patient died so soon after admission and we did not know about this possibility. As we know, this patient had been under prolonged antibiotic therapy, but we do not know what antibiotics were used. Chloramphenicol and tetracycline are broad spectrum antibiotics that are commonly prescribed. We all know that when one takes these broad spectrum antibiotics for a length of time one disturbs the intestinal flora balance, and usually ends up with an overgrowth of the *Monilia*, *Candida albicans*, or the *Staphylococcus*. *Candida albicans* rarely causes as severe an enteritis as this patient had. Diagnosis is not easy sometimes because *Candida albicans* can be isolated in about 25 per cent of normal stools, but in general if you look at a smear you can often see the mycelia form of the *Candida* in some of the endothelial cells which shows you that there is active infection. As to the staphylococcal enteritis this should not present too much of a problem if somebody had done a gram stain of the stool. As we all know, the *staphylococcus aureus* type produce quite a number of metabolites and enzymes which are toxic such as the exotoxin, the alpha haemolysin, and also the enterotoxin which is probably one of the more common ones causing enteritis. I think the patient was in shock with this agent. Some of the work of Dr. Maxwell Finland and his colleagues in Boston show that the enterotoxin in the intestinal tract is quite important in producing irreversible shock. My conclusion would be that this patient had a lung disease, probably carcinoma of the lung, and secondarily, due to the overuse of antibiotics, developed a staphylococcal enteritis.

Dr. Delp: Dr. Frenkel, will you please give us the results of your examination?

Dr. Jacob K. Frenkel: I would like to congratulate the students for making two diagnoses, for making reasonable ones, and for not "ruling out" diagnoses by statistics alone.

This man was indeed very dehydrated. He was estimated to weigh about 175 pounds; he was obese and his skin turgor was quite poor, consistent with a significant loss of fluids and electrolytes. As there is interest in the lung, let us start out with it. We saw at x-ray a radiodensity in the right upper lobe. Microscopically we saw what were probably the residuals

of pneumonia of at least one month's standing. The intersegmental septa were thickened; alveolar exudate, partially organized, remained; and there was pulmonary fibrosis, whether as a result of organization with outgrowth of fibroblasts, or of collapse of alveoli, I could not determine. The fibrosis was present primarily in the right upper lobe and to a small degree in the right lower lobe. The left lobes were normal. The lung block weighed 1100 grams. Cultures from the lung were negative. The heart was believed to be slightly enlarged. It weighed 350 grams and the right ventricle was slightly dilated.

The liver showed fine septal fibrosis and the fact that the patient was said to have been drinking an occasional glass of wine might have been tied up with this. There was a little fat with fine fibrosis in the portal and centrolobular areas of the liver which weighed 1800 grams.

Now we come to the main aspect of this patient's disease, the pseudomembranous enterocolitis. We see a photograph of what Dr. Lukert described from the physical examination of the rectum (*Figure 4*). The colitis extended down into the rectum. We see these very edematous villi and the necrotic areas on the surface. The pseudomembrane is derived from the necrotic tips of the villi. Although, the inflammation extends down into the lamina propria, it is important to realize that this is basically a spotty lesion. In some areas, crypts are pretty normal although there is hypersecretion of mucus (*Figure 4, center*). Next to it there may be inflammation of a villus, with increased permeability of capillaries near the tip with exudation of fibrin, and infarction or necrosis of the mucosa in the distal portion. Bac-



Figure 4. Gross appearance of pseudomembranous colitis in our patient. Near the top center a few uninvolved portions of mucosa are seen. Gross section at right margin. Specimen fixed in formalin. Centimeter scale on lower left.



Figure 5. Tips of villi showing a radiant pattern of fibrin extending from the leaking vessels. PASH. $\times 90$.

teria were present only at a distance in the most luminal aspect of the membrane. There were no staphylococci, the bacteria were all rods, mostly gram negative. It seemed difficult to establish any firm relationship between the small numbers of bacteria present and the lesion in this case, although later I will show another case where one can postulate a relationship. In our patient leakage of plasma from the vessels was most prominent near the tips of the villi. Fibrin layers extended from leaking capillaries in adjacent villi (*Figure 5 and 6*). The lumen of the vessel was open. Phosphotungstic acid haematoxylin specifically stains fibrin and draws attention to the extensive leakage from the capillaries. As we recall, this man's difficulty was largely due to electrolyte and fluid loss. Fibrin exudes not only at the tips of the villi, but all through the lamina propria (*Figure 7*). There was no vascular thrombosis in this case, but there was extensive exudation of fluid and fibrin. In none of these areas were bacteria found. There was no bacterial or fungal infection.

I think it would be well to touch on a different case of so-called pseudomembranous colitis. At least that was the clinical diagnosis; from the pathologist's point of view we might call it acute colitis (*Figure 8*). No pseudomembrane was formed, although there

was sloughing of the tips of the villi. There was less outpouring of fibrin. Actually the blood vessels were filled with red cells and fibrin threads; thrombosis was present (*Figure 9*). Furthermore, there was intense inflammation and bacteria were present throughout (*Figure 10*). Thrombosis of vessels, as Mr. Brady described, occurred in many such cases. Although we find thrombosis in the lamina propria, there was very little fibrin or none at all outside the vessels. Bacteria filled the glands. It appears possible to relate the thrombosed vessel with the bacteria which are shown in the glands (*Figure 10*). Proliferation of the endothelium indicates this thrombosis was not terminal but that it had existed for a while.

We are all interested in the etiology of these two forms of enteritis, but we find many obstacles to gaining insight. Perhaps true to form, the patient's clinical history told of "antibiotics" and "steroids" as if it made no difference what antibiotics were used, in what dose, for what period of time, and how administered. Likewise, it did not seem to matter what "steroids" were used. If we speak of "steroids,"

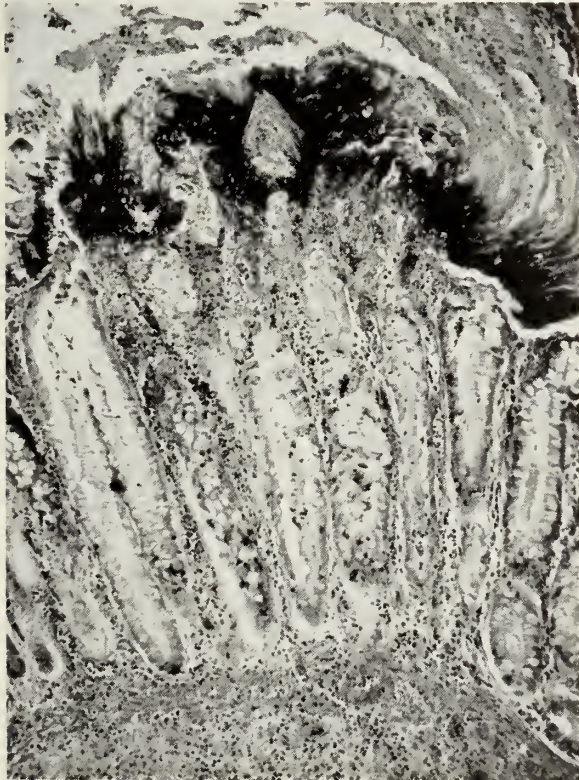


Figure 6. The fibrin arising from the vessels is stained black. The pseudomembrane is composed of this fibrin and the necrotic tips of the villi. No bacteria have been seen in the field, shown. PTAH. $\times 90$. Compare with *Figure 4*.

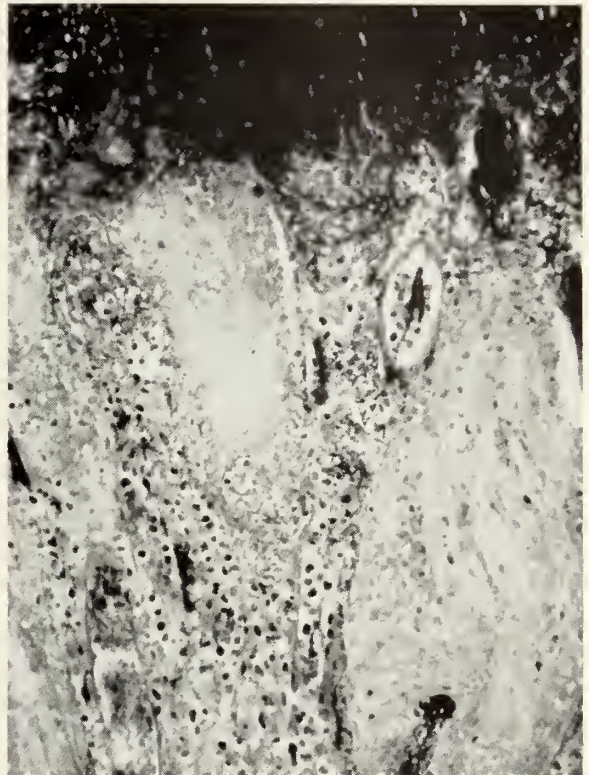


Figure 7. Tip of villus with black-staining fibrin threads extending from blood vessels. This is more marked distally, but can be seen to extend through the entire lamina propria and mucus. Inflammatory cells are mainly macrophages. PTAH. $\times 225$.

we act as if they were good or evil spirits, although some of them might be androgenic or estrogenic, anti-inflammatory or progestational in action. We tried to get cultures in this case. We sent heart, blood and spleen for "routine culture" and colon "for fungi, aerobic and anaerobic." This shows up one of the fallacies of "ordering" a test without checking that the message was conveyed. The blood culture was reported negative after ten days; spleen culture negative after five days. Chemotherapeutic agents remaining in the specimens probably accounted for this since the autopsy was done 18 hours after death, and it is unlikely that the organs remained sterile. As to the colon, fungus cultures were started, and on checking we found they were started both aerobically and anaerobically. Omission of the term "bacteria" led to no bacterial cultures being made from the colon. Unfortunately, no smears were made either, and most of the enteric flora was not evaluated by ordinary cultures.

So, we are left with a diagnosis of well-developed pseudomembranous enterocolitis and proctitis. The many postulated etiologies have been mentioned by



Figure 8. Comparison of lesions in our case 4678 (below) with those of another patient 4763 (above) with the same clinical diagnosis, but who did not actually have a pseudomembrane. Specimen fixed in formalin. Centimeter scale, lower left.

several of the discussants. The fact that so many of them are mentioned indicates that we probably deal with a syndrome of multiple etiologies. Obstruction or uremia were not present. Antibiotic administration by mouth and even parenterally is important, since

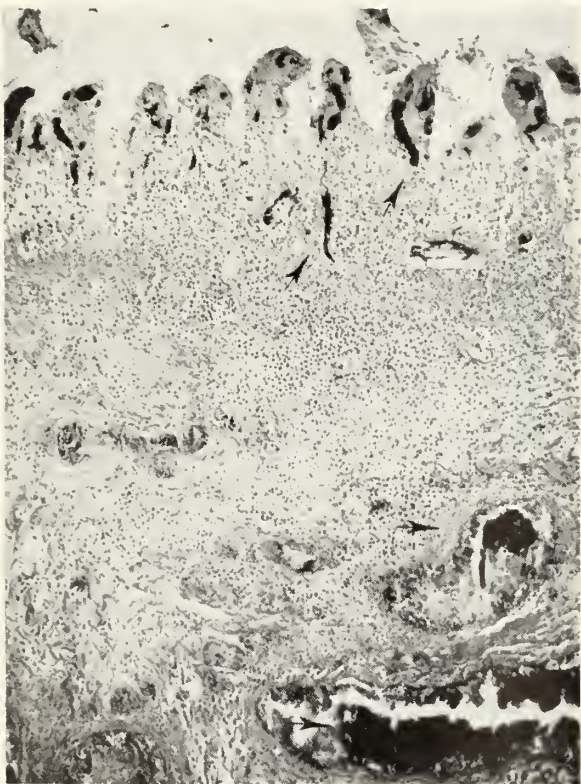


Figure 9. Severe acute colitis with black-staining fibrin thrombi in the blood vessels of the villi, and the submucosa (arrows). Case 4763, PTAH, $\times 90$.

we recall that penicillin, the tetracyclines and chloramphenicol are excreted to a large degree in the bile, hence get into the intestine and can change the flora. Another important aspect is hypoxia and shock and this certainly was a factor here. Whereas shock could favor development of the lesion we see, shock could also result from the lesions present. It is difficult to decide which came first.

The vascular damage is most important and we have seen two types: one with excessive vascular permeability, and the other with intravascular thrombosis. References for each of several types of etiology

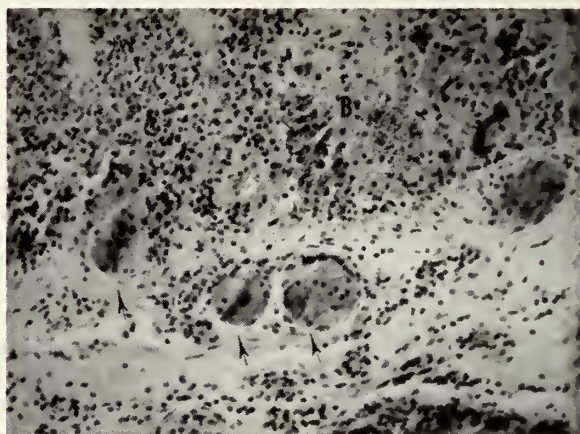


Figure 10. Bacteria (B) are numerous in the glands of the colon. The ill-defined homogenous masses in the dilated capillaries are fibrin (arrows). Polymorphonuclear neutrophils are numerous. Case 4763. Giemsa stain. $\times 225$.

are appended to emphasize their variety. An article by Dr. Dummins² discusses the pathology of nosology, or morbid manners at naming diseases. Experimentally, a picture as we have in our patient has been produced by the administration of staphylococci.⁷ It resembles diphtheria, and it reminds one of the picture in cholera—except that in cholera less protein is lost with the fluid.

The other types of enteritis with thrombosis of blood vessel has been reproduced by giving incompatible blood, by giving endotoxin, and by giving intravenous thrombin.^{3, 5, 6} Staphylococci enhance the development of the lesion, probably by means of the coagulase they secrete which acts like thrombokinase.⁷ The glucocorticoids used in our patient act as co-factors since they enhance the clotting mechanism underlying the Schwartzman phenomenon.⁶ Likewise, vasopressin and epinephrine act synergistically by enhancing clotting mechanisms. The experimentally produced thrombotic vasculitis is in part prevented by heparin.⁶

What were the etiologic factors in our patient?

Do they include bacteria acting at a distance? Perhaps exo- or endotoxins? Was there a virus infection? Possibly an invisible bacterium? Did we overlook a small bacterium, like pleuropneumonia organisms, that we cannot recognize on sections? I think these are possibilities, with the prime etiologic factor aggravated by the normal or by the drug-altered microbial flora, and the corticosteroids given. In addition, we should think of an altered reactivity of the gut. At times the lesion seemed to me like "hay fever of the colon," with an extreme outpouring of fluid, but there were no eosinophils and there was nothing really to incriminate an allergy. Perhaps we see the result of a drug idiosyncrasy, non-hypersensitive in origin.

Concerning the often-invoked gram-negative septicemia, I think we have little evidence of its playing a role, since three blood cultures were negative in our patient. Septicemia is not present as often as it is cited, although many genuine instances are missed. Local factors appear necessary to explain the picture in this patient.

Finally, as to management, I recently attended a symposium where the management of cholera was discussed. It has been found that from 8 to 17 liters of fluid can be lost in the first 24 hours. This was remedied by replacement of fluid in the form of plasma, infusing it not into just one vein, but into four veins with all the tubes wide open.

Primary Diagnoses

Pseudomembranous colitis and proctitis.

Fibrous pleuritis, right, severe, with chronic focal interstitial pulmonary fibrosis.

Decreased tone of skin and intestinal wall.

Ascites (500 ml. of straw-colored fluid).

Hydropericardium (50 ml. of straw-colored fluid).

Acute passive congestion of the liver and spleen.

Histiocytic and reticulum cell hyperplasia of the spleen.

References

1. Birnbaum, D., Lafe, A. and Freund, M.: Pseudomembranous enterocolitis. A clinicopathologic study. *Gastroenterology* 41:345-352, 1961.
2. Cummins, Alvin J.: Pseudomembranous enterocolitis and the pathology of nosology. *Am. J. Dig. Dis.* 6(5):429-431, 1961.
3. Hardaway, R. M., *et al.*: Studies on the relationship of bacterial toxin and intramuscular coagulation to pseudomembranous enterocolitis. *J. Surg. Res.* 1(2):121-127, 1961.
4. Kleckner, Martin, Bagen, J. A. and Baggenstoss, A. H.: Pseudomembranous enterocolitis: Clinicopathologic study of 14 cases in which the disease was not preceded by an operation. *Gastroenterology* 21:212-222, 1952.
5. McKay, D., Hardaway, R. M., *et al.*: Experimental pseudomembranous enterocolitis. *AMA Arch. Int. Med.* 95:799, 1955.
6. Stetson, Chandler A., Jr.: Vascular effects of endotoxins. *Bull. N. Y. Acad. Med.* 37(7): 486-492, July, 1961.
7. Tisdale, W. A., Fenster, L. F. and Klatskin, G.: Acute staphylococcal enterocolitis complicating oral neomycin therapy in cirrhosis. *New Eng. J. Med.* 263(20):1014-1016, 1960.

PREPARATION OF MANUSCRIPTS FOR THE JOURNAL

Exclusive Publication: Articles are accepted for publication on condition that they are contributed solely to this Journal. Publication elsewhere will be subsequently authorized in the discretion of the Editor.

Correspondence: Address all correspondence relating to publication of scientific papers to the Managing Editor.

Manuscript: Type double spaced, on white paper, 8½ by 11, with one-inch margins at the top, bottom, and right, and 1½ inches on the left. Submit the original. Call drugs by their generic names. The trade names can be added, in parenthesis, if they are considered important. Keep one copy of the paper.

Footnotes and References: Use the style of the *Quarterly Cumulative Index Medicus* published by the American Medical Association, which requires, in the order given: name of author, title of article, name of periodical, with volume, pages, month—day of month if weekly—and year as follows:

4. Doe, J. E., What I Know About It, *J. Kans. M. S.* 54:717-719 (Dec.) 1954.

Include only those references specifically referred to in the text.

Reprints: An order slip for reprints with a table covering cost will be sent with the galley proof to each contributor.

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Under ordinary circumstances articles are scheduled several months in advance. Notice will be given the contributor when the article has been accepted and again before publication.

Society members throughout the state are encouraged to write up their interesting cases and submit them for publication. The editorial staff welcomes the opportunity of helping you prepare your article for the printer.

The President's Message

DEAR DOCTOR:

Some recent figures released by the Kansas Blue Cross-Blue Shield were of interest to me, and I think they might possibly interest you.

Expenses Incurred as Per Cent of Premium Income for Health Coverage of the Ten Largest Group Health Carriers in Kansas:

	1962
1. Kansas Hospital & Phys. Service ...	6.8%
2. ...	13.0%
3. ...	11.0%
4. ...	14.6%
5. ...	16.5%
6. ...	12.1%
7. ...	14.5%
8. ...	21.0%
9. ...	26.6%
10. ...	27.2%

Other Statistics:

Contracts Per Administrative Employee:

	1962
Kansas	2,621
Oklahoma	2,112
Colorado	2,497
Kansas City, Mo.	2,374

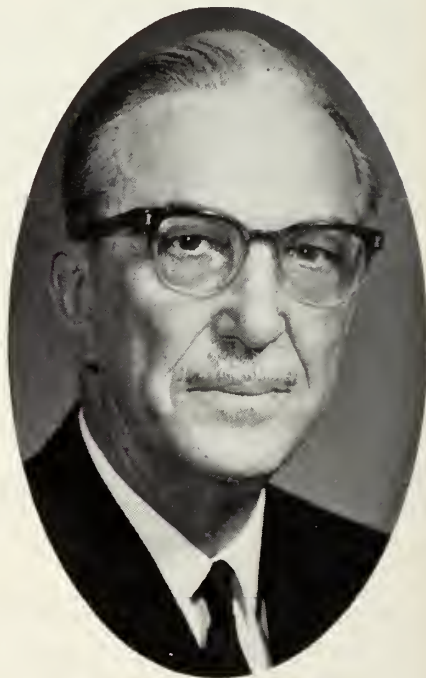
7.1% Income used for operating expenses in Kansas in 1960 compares favorably with the National Coverage of 7.9%.

82% of Blue Cross Plans reporting to the National office in 1962 had higher claim processing costs than Kansas.

Sincerely,

H. H. Clair O' Donnell M.D.

President





Orange Blossoms in the Sun

The marriage of the physician to his profession is a beautiful and gentle thing. The ceremony is unheralded and unsung. In fact, it is so subtle that the partner to the affair is totally oblivious that it is taking place.

The honeymoon occurs at about the time the young doctor becomes attending staff at his first hospital. He can be found almost any Saturday afternoon stationed with one of his cohorts at a centrally located nursing station. He can't play golf because he doesn't belong to a club. There is no point in working in the yard since he rents his apartment. Here is our young neophyte with all of his knowledge and dedication but no one to know; too few patients to find out; and staff men too busy to listen. This is the honeymoon, the couple left alone, he and his profession, with only a captive audience of student nurses. In his worn tweed coat with pipe aglow, he takes his young bride by the hand and discourses in a glib and pedantic fashion. There is much use of medical terms. Patients are referred to by their first names. "Gloria had a pain today." Each disease is rolled over the tongue with savored deliberation. "Lues" sounds like the king's first cousin. The young nurses are visibly impressed; the older ones are tolerant.

The honeymoon ends and the marriage reaches bed rock reality when our young man turns the first patient over to a collection agency. Also, about this time, he takes the green cross off of his car. These changes are not cause for lament since they are signs of maturity. Each practical problem solved welds the rings more solidly together.

Time drifts on with only minor rifts in marital bliss. Ten years pass. Then at a so-called age of

maturity just when his reflexes have started to slow down, our hero decides to live dangerously. He suddenly falls ill to the "senile flare." He simply must learn to fly, enter speedboat racing, learn to ski or shoot grizzly bears, to name only a few risky endeavors. These so-called hobbies are not the take it or leave it kind but real compulsive rascals. If he is lucky he may survive this dangerous age. Quite a few have not.

So it goes. The practice of medicine changes as social reforms change. The doctor himself changes; many times being a victim of his own caprices as well as a victim of society. Irrespective of all these deterrents there is one loyalty that never waivers, namely, his first love—medicine. Certainly this is a marriage made in the sun; made to contain the fiery heat of courage and constructed to emit the light of truth for eons upon eons.

DONALD P. TREES, M.D.
Wichita

County Society Activities

The American Medical Association recently distributed a 23-page pamphlet tabulating the activities of county medical societies from information received by way of questionnaires. This pamphlet was sent to each of the county medical societies in this nation. Should additional copies be desired, they may be obtained through the Kansas Medical Society or the American Medical Association.

The pamphlet contains many tables and graphs and much statistical data. It would be of particular in-

terest to officers who are charged with the responsibility of conducting county society programs because it offers in statistical form information on activities conducted throughout the country.

There are 3,070 counties in the United States and about 1,929 county medical societies. Two hundred seventy-two are multi-county medical societies mostly in the sparsely settled areas of the country. Many of these are quite small. In fact, two-thirds of the multi-county societies report fewer than 50 members. It appears from this report there are 936 county medical societies with fewer than 15 members, an additional 516 with a membership of more than 15 but fewer than 50. There is one county medical society with a membership approaching 10,000.

The pamphlet gives some information on meetings. Almost two-thirds of the societies hold monthly meetings. The remainder are quarterly or semi-annual. Topics that draw the best attendance are scientific programs by well-known guest speakers and socio-economic presentations. The majority of societies reporting stated that the scientific program draws the best attendance. Economic topics appear to become increasingly popular as the society increases in size. Medical films are not rated as very popular but in the smallest societies are still used with some regularity. None of the larger societies use films except as applied by a speaker.

It is interesting to note that society attendance is increasing. Many are combining hospital staff meetings with society programs. The per cent of membership attending a meeting, of course, is higher in the smaller societies. For example, 111 of the smallest societies report an average attendance of 90 per cent.

Much of the pamphlet deals with society activities and the activities of its members. Ninety per cent of all societies reporting stated some of their members were actively engaged in political or governmental work. It was reported there were 54 mayors, 90 city council members, 29 state legislators. The remainder included a wide variety of activity such as membership on the college board of regents, housing boards, county commissioners and so forth. Most societies have committees and almost all societies are engaged in community programs. Fifty-eight per cent cooperate with blood banks, 63 per cent work in cancer control, 68 per cent conducted mass oral polio vaccination programs, 95 per cent of the societies conduct maternal and infant mortality studies. Almost 60 per cent operate poison control centers.

There is a wide variation in dues collected by county societies. In many instances the dues include special assessment to AMA-ERF or SAMA, or a wide variety of other programs. Generally, the dues in the smaller county societies are lower than in the larger

societies. The dues charged by societies with fewer than 15 members range from \$1 to \$350. The average for this group is \$16.04. The most frequent dues are between \$5 and \$10. The second group of county societies with a membership of 16 to 49, ranges in dues from \$1 to \$193, the average being \$20.22. In each of the categories the average dues structure rises with its size. Societies with the largest membership charge on an average of just under \$50.

The above is a brief summary of a most interesting report containing a great deal more data than is listed here. Officers of county societies and other physicians will find a review of this pamphlet of interest and rewarding. It is our impression the county societies in this state will compare favorably with all county societies in the manner of their effectiveness.

Push right to the extreme and it becomes wrong; press all the juice from an orange and it becomes bitter.—*Baltasar Gracián*

NEW MEMBERS

The JOURNAL takes this opportunity to welcome these new members into the Kansas Medical Society.

Howard F. Gloyne, M.D.
1310 North 20th
Kansas City, Kansas

**James S. Hunter, Jr.,
M.D.**
1200 Fremont
Manhattan, Kansas

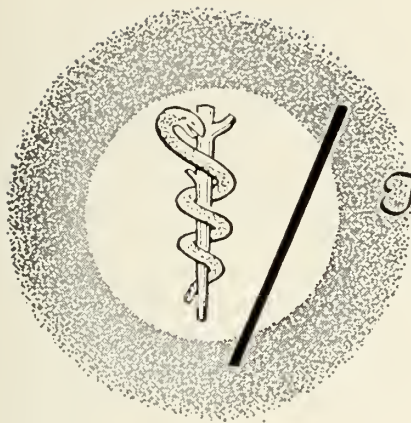
Vernon J. Jobson, M.D.
665 New Brotherhood
Building
Kansas City 1, Kansas

Harold R. Onkst, M.D.
K. U. Medical Center
Kansas City, Kansas

The Clendenen Medical Library has assumed responsibility for the readers and reference service formerly offered by the Stormont Medical Library. A list of recent acquisitions at the library can be found on page 526 of this issue.

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The Kansas Press Looks at Medicine

Editor's Note. In this section the JOURNAL reproduces editorials relating to medicine which have appeared in the lay press. An effort is made to include both favorable and unfavorable comments, and the Editorial Board in no instance assumes responsibility for the opinions expressed.

A MEDICAL TRAINING ACT FOR MORE DOCTORS

The bill to aid medical education and thereby produce more physicians and dentists now is through both houses of Congress. At this point, perhaps the measure ought to be considered in the light of two questions:

- Will it produce more doctors and dentists?
- Is it an unwarranted federal interference in medicine and education?

Generally, the bill can be divided in two parts. Over a 3-year period matching funds will be available for the construction of dental and medical schools or the expansion of existing institutions. For existing schools to qualify, they must demonstrate a 5 per cent increase in enrollment.

The second part concerns student loans. This was the most controversial item. Loans of up to \$2,000 a year will be available at about 3 per cent interest. They are repayable over 10 years with payment to begin three years after graduation. In testimony it was pointed out that the American Medical Association offers student loans. However, the president-elect of the Association of American Medical Colleges made this comparison:

A student who entered medical school in the fall of 1962, graduated in 1966 and borrowed \$1,500 for each of the four years under the A.M.A. plan, would pay \$4,500 in interest, assuming repayment was completed by 1977. Under the federal loan program he would pay \$900 in interest for the same amount of money over the same length of time.

It appears that the measure would make it easier for young persons to enter medicine and also provide facilities for their training. It ought to be noted, too, that while in the past, federal money has gone to the

schools for research and hospital construction, none has gone for their primary purpose which is education. Whether federal interference is involved depends on your point of view. One amendment that would have encouraged the loan recipients to locate in areas of doctor shortages was defeated. Many doctors are understandably sensitive about any federal participation. Yet the A.M.A. favored the school construction section of the bill and opposed only the loan provisions.

Now the bill is passed and its objective remains: The production of more dentists and doctors. Perhaps the best insurance against further government inroads is for the schools, the associations and others concerned to work together for its success.—*Kansas City Star*, September 14, 1963.

NOT BY BREAD ALONE

A new dimension has been added to the practice of medicine. This happened at the most recent annual meeting of the American Medical Association, when the first program on medicine and religion was presented.

This is a direct result of the rapid advance of medical science. New problems and new needs demanding cooperation by the medical fraternity and churchmen have been created. It is recognized, nowadays, that health is affected by physical, spiritual, emotional and social conditions, and that ideal treatment should be directed toward the whole man. The A.M.A. began its efforts to make this ideal of health care realistic by establishing a Department of Medicine and Religion. Ten physicians and ten clergymen were named to provide counsel. Pilot programs followed, and now

(Continued on page 525)



Blue Shield

Subscribers' Benefit Interests A Blue Shield Challenge

In efforts to increase its scope of benefits, Blue Shield has a continuing interest in what subscribers feel are areas of coverage that might be expanded. Although physicians' opinions and economic trends have been primary in molding Blue Shield program development, the expression of interest by large numbers of members is likewise a basic factor in the process of ongoing revision and improvement of Blue Shield benefits.

A recently completed sample of subscriber opinions shows that there are two areas where concern is greatest regarding Blue Shield benefits. First among felt needs of subscribers is the desire for an expanded scope of Blue Shield covered out-patient services. Among those surveyed, the most frequently encountered remark was that Blue Shield does not cover as many out-patient services—home and office calls, laboratory services, etc.—as many of the public might desire.

Second on the list of subscriber interests was the hope that Blue Shield will not overlook the need to provide better benefits for the aged.

Assessing Blue Shield's present position in regards to these two subscriber concerns shows that the Plan has already made significant progress in both directions.

The Out-Patient Services Question

In the area of out-patient services, a number of optional coverages are available. The Extended Benefit Rider which covers cancer and eight other catastrophic diseases is available to both group and non-

group Blue Shield subscribers. This rider provides coverage above basic Schedule 1, 2, or 3 payments which is unallocated and which may be used for any category of out-patient service provided.

Blue Shield Major Medical coverage is available to most group members. Major Medical benefits extend to out-patient services including home and office calls as well as laboratory tests after an out-of-pocket deductible has been satisfied. Payments for covered services are made on a co-insurance basis with Blue Shield handling 80 per cent of cost in most instances.

Growing steadily in enrollment are two relatively new extended coverage riders which are also available to groups at very low rates. These are the Supplemental Accident Rider and the Laboratory Services Rider.

The Supplemental Accident Rider provides stated amounts of coverage above basic benefits that may apply to any out-patient need connected with accidental injury. The Laboratory Services Rider is specifically designed to make benefits available for out-patient laboratory and pathological evaluations, excluding only routine physical examinations and maternity procedures.

Also available to groups is a Home and Office Call Rider.

Since a number of optional out-patient coverages are available, Blue Shield's greatest responsibility would appear to be one of education. This educational responsibility is twofold: first, to make eligible subscribers aware of the availability of such extended coverages and, second, to inform the subscribing pub-

lic of the economic factors that should be weighed when considering selection of such coverage.

In respect to the second point, subscribers often overlook the possibility that selection of extended benefits for out-patient services—if made too hastily—may result in a “dollars’ trading” situation. To a certain extent the purchase of prepaid benefits for routine out-patient care is no different than laying aside a like amount in the family budget. On the other hand, the need to prepay the large, or “catastrophic,” out-patient services need may be quite as desirable as the economical desirability of surgical and in-hospital medical prepayment. Thus, communication of economic considerations in out-patient care coverages and guidance in their selection becomes an important responsibility of Blue Shield to its subscribers.

So far, Blue Shield has not been as successful in developing extended outpatient coverage options for non-group subscribers as it has with group members. The factors of expense and selection have imposed certain obstacles in developing similar non-group products. The challenge to Blue Shield in this area is one with which work in the future must be continued.

Programs for the Aged

Blue Shield’s development of two plans specifically designed for persons over 65 has been much publicized throughout the past year. It is felt that the majority of the public is now aware that the Senior Citizens Plan and the Series 60 Plan have done much to fill the gap that once existed in coverage for the aged. Senior Citizens Plan enrollment is not presently open, the program now being observed as it operates with a membership of some 3,500. The Series 60 Plan, a combined Blue Cross-Blue Shield Major Medical type approach, is permanently open for new enrollment and applications for membership continue to be received as more and more people become aware of its availability.

It is hoped that Blue Shield’s educational efforts are rapidly satisfying public concern that programs for the aged are now a reality. The need for further refinement and revision to improve such plans is recognized, however. The experience gained in initial months under Series 60 and the Senior Citizens Plan should furnish better insights into the programs’ adequacies, and needs for improvement—if such exist—should become apparent.

Blue Shield believes that its subscribers’ major interests in broadening benefits are areas in which Blue Shield is presently at work. That such is true is encouraging, and it would be desired that Participating Physicians assist Blue Shield whenever possible

in communicating present Plan efforts in these matters to the public.

LEUKEMIA PAMPHLET

“Childhood Leukemia—A Pamphlet for Parents,” prepared for distribution by physicians to parents of leukemic children, has just been released by the National Cancer Institute, Public Health Service, Department of Health, Education, and Welfare.

The text is by Dr. Stanford Friedman, formerly of the National Institute of Mental Health and now Instructor in Pediatrics and Psychiatry, University of Rochester; Dr. Myron Karon of the National Cancer Institute; and Mr. Gary Goldsmith of the National Institute of Mental Health. The pamphlet is intended to contribute to parents’ understanding of leukemia and its treatment.

Organized in three parts, “Childhood Leukemia” includes information about the normal blood and its proper functioning; the symptoms, complications, and treatment of leukemia; and some of the problems children face during hospitalization. A glossary defines medical terms frequently used in discussing leukemia. Material for the pamphlet was drawn from a 2-year joint project of the National Cancer Institute and the National Institute of Mental Health which involved the study of the psychological and physiological adaptations to chronic stress of parents of children hospitalized for leukemia at the Clinical Center of the National Institutes of Health.

Copies of “Childhood Leukemia—A Pamphlet for Parents,” are available to *physicians only*, free of charge, from the Office of Information and Publications, National Cancer Institute, Bethesda 14, Maryland.

The Kansas Press Looks at Medicine

(Continued from page 523)

this Department is prepared to offer its services to hundreds of state and local medical societies.

The need was spoken in the 17th century, by John Donne, poet, preacher, and patient: “I observe the physician with the same diligence as he the disease; I see he fears, and I fear with him. . . . I fear the more because he disguises his fear, and I see it with the more sharpness because he would not have me see it. He knows that his fear shall not disorder the practice and exercise of his art, but he knows that my fear may disorder the effect and working of his practice.”

So we return to the ancient injunction—man does not live by bread alone.—*Liberal Southwest Daily Times*, September 28, 1963.



Along The BOOKSHELF

Clendening Medical Library

RECENT ACQUISITIONS

- Aegerter, E. E. and Kirkpatrick, J. A., Jr. Orthopedic diseases; physiology, pathology, radiology. 2d ed. Saunders, 1963.
- Boylard, Eric. The biochemistry of bladder cancer. Thomas, 1963.
- Burch, G. E. A primer of cardiology. 3d ed. Lea & Febiger, 1963.
- Burrows, William. Textbook of microbiology. 18th ed. Saunders, 1963.
- Cannon, W. B. Bodily changes in pain, hunger, fear and rage. 2d ed. Harper & Row, 1963.
- Christensen, H. N. Body fluids and their neutrality. Oxford University Press, 1963.
- Collis, J. S. Lumbar discography. Thomas, 1963.
- Conference on Thyrotropin, Arden House, 1962. Thyrotropin; proceedings. Werner, S. C., ed. Thomas, 1963.
- Conger, K. B. Transurethral prostatic surgery. Williams, 1963.
- Davson, Hugh. The physiology of the eye. 2d ed. Little, Brown, 1963.
- Doby, Tibor. Discoverers of blood circulation, from Aristotle to the times of da Vinci and Harvey. Abelard-Schuman, 1963.
- Ewalt, J. R. and Farnsworth, D. L. Textbook of psychiatry. McGraw-Hill, 1963.
- Fedukowicz, H. B. External infections of the eye: bacterial, viral, and mycotic. Appleton-Century-Crofts, 1963.
- Follmann, J. F. Medical care and health insurance. Irwin, 1963.
- Ginsburg, S. W. A psychiatrist's view on social issues. Columbia University Press, 1963.
- Haldane (J. S.) Centenary Symposium, Oxford, 1961. The regulation of human respiration; the proceedings. Edited by D. J. C. Cunningham and B. B. Lloyd Davis, 1963.
- Hausman, Louis. Clinical neuroanatomy, with a method of brain reconstruction. Thomas, 1963.
- Heath, R. G., ed. Serological fractions in schizophrenia. Harper & Row, 1963.
- Hershey, F. B. and Calman, C. H. Atlas of vascular surgery. Mosby, 1963.
- Kadis, A. L. and others. A practicum of group psychotherapy. Harper & Row, 1963.
- Kinsella, T. J. Tumors of the chest. Thomas, 1963.
- Koontz, A. R. Hernia. Appleton-Century-Crofts, 1963.
- Lynch, M. J. and Raphael, S. S. Medicine and the state. Thomas, 1963.
- Magoun, H. W. The waking brain. 2d ed. Thomas, 1963.
- Morehouse, L. E. and Miller, A. T. Physiology of exercise. 4th ed. Mosby, 1963.
- Moscovitz, H. L. and others. An atlas of hemodynamics of the cardiovascular system. Grune & Stratton, 1963.
- Moseley, J. E. Bone changes in hematologic disorders (Roentgen aspects). Grune & Stratton, 1963.
- Nourse, A. E. and Marks, Geoffrey. The management of a medical practice. Lippincott, 1963.
- Noyes, A. P. and Kolb, L. C. Modern clinical psychiatry. 6th ed. Saunders, 1963.
- Osgood, C. E. and Miron, M. S., eds. Approaches to the study of aphasia. University of Illinois Press, 1963.
- Papper, E. M. and Kitz, R. J., eds. Uptake and distribution of anesthetic agents. McGraw-Hill, 1963.
- Purdum, C. E. Genetic effects of radiations. Newnes, 1963.
- Reese, A. B. Tumors of the eye. 2d ed. Harper & Row, 1963.
- Robertiello, R. C. and others. The analyst's role. Citadel Press, 1963.
- Robins, R. B., ed. The environment of medical practice. Year Book, 1963.
- Root, W. S. and Hofmann, F. G., eds. Physiological pharmacology. v.1, pt. A. Academic Press, 1963.



Book REVIEWS

SYNOPSIS OF ROENTGEN SIGNS by **Isadore Meschan, M.A., M.D.** W. B. Saunders Company, Philadelphia, 1962. 436 pages, illustrated, \$11.00.

Dr. Meschan is a widely respected teacher of clinical radiology. His comprehensive text, *Roentgen Signs in Clinical Diagnosis*, is a standby of first-year radiology residents the country over. The present volume is essentially a distillation of the larger work, developed primarily for teaching fundamentals of diagnostic roentgenology to third and fourth year medical students.

Beginning with a brief, but adequate, non-mathematical description of basic x-ray physics and a sensible section on fundamentals of protection, a vertical organization of material by body systems is followed. In each instance, a visual review of gross and roentgen anatomy is accompanied by an illustrated demonstration of the various projections and techniques commonly employed to show the part or organ to best advantage. This is a most helpful feature of the book for those requiring an orientation to the methods of roentgen study. Complex special procedures such as angiography and pneumography of the brain are mentioned only in regard to the indications for their use.

The sections on roentgen manifestations of morphologic and functional alterations from normal emphasize well-chosen roentgenograms and clear line drawings, coupled with a sharply-focused, telegraphic outline of x-ray findings, clinical clues, and differential diagnosis. Interpretation based upon a sound knowledge of underlying pathology is accented throughout. There is a wealth of information presented. A thoughtfully selected series of questions for teaching purposes complete each chapter.

For the medical student, this is a logical introduction and guide to the wide range of information obtainable from clinically correlated x-ray studies. For the physician who is not a radiologist, it serves as an

excellent, easily-digested survey of pathologic changes demonstrable roentgenologically and their differential diagnosis. The clinical radiologist will find pleasure, profit, and perhaps an occasional fresh point of view in perusing this modest text.

Production is of Saunders' usual high quality and the binding is sturdy. This reviewer heartily recommends the book for its intended purpose.—J.W.T.

SURGICAL PRACTICE OF THE LAHEY CLINIC by members of the Staff of the Lahey Clinic, Boston. W. B. Saunders Company, Philadelphia, 1962. 872 pages, illustrated, \$17.00.

This third edition of the *Surgical Practice of the Lahey Clinic* follows the tradition and excellence of the work done at this Clinic. It reports, illustrates and re-evaluates methods and procedures as used by a small group of outstanding esoteric practitioners and teachers of surgery. Practically all phases of surgery are covered. It is delightful and practical reading for all surgeons and students of surgery. One cannot help but gain new knowledge and confidence as he sees the many illustrations, carefully labeled, of many operative techniques, and in the compilation of cases—and results, by the careful follow-up of patients. It is refreshing to note the instances where in re-evaluating results the authors admit better results are to be desired and ways their former procedures could be improved.

The table of contents stirs one's curiosity to read about the newer techniques in stereotactic surgery, biliary tract repair and even the lowly pilonidal cyst. There is a surprising absence of cardiac procedures—being limited to some work on aneurysms, although a rather complete description of the mechanical devices used in cardiovascular surgery is presented. Orthopedics is interestingly, but sparsely, covered.

There are many illustrations, figures and statistical tables carefully captioned. There is no boring redun-

dancy or historical data found in this volume. Much of the material has been previously published in different surgical journals as well as the Medical Clinics of North America.

It appears to me that the most practical and complete section is that done on the gastrointestinal and especially the biliary tract.

Dr. Cattell states in the preface that this is not a textbook on surgery, but I feel it would be hard to find a textbook so well written. All who read this book will be well rewarded for the time taken to do so. It is an outstanding, quick, ready reference book for all surgeons.

Like good pictures, speeches and shows, this work leaves you wishing there were more of it.—*G.E.K.*

ACTIVITIES OF SURGICAL CONSULTANTS edited by B. Noland Carter, M.D. United States Army Medical Service, 1962. 621 pages, illustrated, \$6.50.

This twentieth volume in the series of medical experiences in World War II deals with the experiences of Surgical Consultants. It describes the activities of the consultants in the Office of the Surgeon General, the Service Commands, and overseas U. S. Armies. A later volume will continue the study in theater level.

The consultant system was not organized before the war (World War II) and the lack of precedent, the confusion of lines of authority, embarrassment of rank, and questions of lines of communication all hindered its functions in early experiences. The desire of consultants to cut red tape did produce improvements, and before the end of the war the value of the consultant was unquestioned. They "performed many functions, but they never lost sight of the fact that their first duty was the provision of good medical care for wounded casualties."

The volume describes the experiences of consultants in the various areas noted above, and includes their problems and difficulties, with their recommendations for solving them. The role of the consultants was an important cog in providing improved care for wounded soldiers.

Anyone who served overseas will probably enjoy searching such a book for reference to his own unit and its work, and text reference and illustrations do deal with experiences of many units.

As the Surgical Consultant to the Fifth Army, Dr.

Howard E. Snyder of Winfield contributed this section of the book.—*O.R.C.*

WOUND BALLISTICS edited by Lt. Col. James C. Beyer, M.C., U. S. Army. United States Army Medical Service, 1962. 883 pages, illustrated, \$7.50.

This volume, another in the series of reports of World War II medical experiences, presents information about enemy ordnance material used in World War II and the Korean War, the ballistic characteristics of many wounding agents, and a study of the mechanism of wounding by various types of missiles. Much of this material is descriptive in detail, and would seem to be excellent for reference rather than for general reading.

There are also detailed reports of the study of casualties in the New Georgia and Burma campaign, Bougainville campaign, Italy, Fifth Army Hospitals, Cassino (Italy), Eighth Air Force, and Korea. Finally a discussion of Personnel Protective Arms is presented—helmets and body armor.

There are over 350 excellent illustrations, and the book of 883 pages is well printed on high grade paper.

Kansas physicians will be interested to know that Dr. Howard E. Snyder of Winfield is co-author of the chapter on Fifth Army Hospital Casualties, in his capacity as Surgical Consultant to the Fifth Army.

Although the nature of the subject matter of this book probably precludes its having a large reading among physicians in practice, it should be of inestimable value in military usage, and is a useful reference source for a limited number of civilian casualty cases. It is well prepared, in keeping with the other volumes of the series.—*O.R.C.*

SYNOPSIS OF OBSTETRICS by Charles E. McLennan, M.D. The C. V. Mosby Company, St. Louis, 1962. 464 pages, \$6.75.

The author is to be commended for a very excellent revision and rearrangement of the *Synopsis of Obstetrics*. Much of the older material, no longer applicable in this day of obstetrics, has been deleted and newer more recent methods of therapy have been added to the book. The author has been able, without waste of words, to cover rather completely each subject as it is presented.

For those practicing obstetrics, this new revision is a book well worth having on the library shelf.—*R.S.*



Personalities—IN KANSAS MEDICINE

Louis N. Speer, Ottawa, has been named a member of the board of directors, Flying Physicians Association. Dr. Speer was chosen for the post during the association's eighth annual meeting held recently in Aurora, Illinois.

Homer L. Hiebert, Topeka, presided as president of the Kansas Tuberculosis and Health Association at that organization's annual meeting in Kansas City in September. Among those from Topeka who attended the meeting were **Evalyn S. Gendel** and **William Nice**.

A free diagnostic clinic for crippled children of Norton County was held at Norton in October. **John F. Thurlow**, Hays, conducted the clinic.

Martin Halley, Topeka, was elected president of the Kansas Thoracic Society at the society's annual meeting in Kansas City in September. **William Nice** of Topeka was chairman of the meeting, which dealt with special clinical problems in chest diseases.

Gerald Mowry has completed a three-year residency in Obstetrics and Gynecology at the University of Kansas Medical Center and is now associated with **Robert Heasty** in Manhattan.

The principal speaker on the program for the Old Settlers' Day celebration held in Marion in September was **James A. Wheeler** of Newton.

Governor John Anderson recently appointed **P. G. Price**, Wellington, coroner of Sumner County.

Irene Koeneke, Halstead, is not only a physician but also the state's top quilt maker. Dr. Koeneke won the sweepstakes award for a patriotic quilt displayed at the Kansas State Fair in Hutchinson in September.

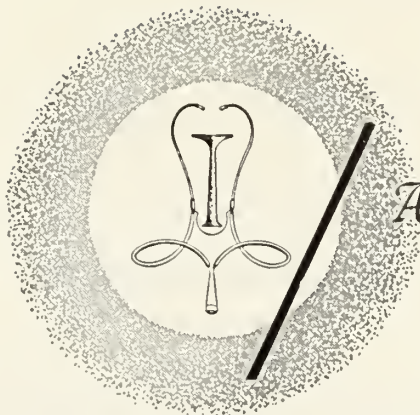
A. L. Pettis, El Dorado, was the recent recipient of a 50-year pin for a half century of medical practice. The pin was presented to Dr. Pettis by **G. E. Kassebaum**, El Dorado, on behalf of the Butler County Medical Society.

Another physician receiving an award for many years of service is **Clark W. Zugg**, Great Bend, who was presented a plaque at a dinner honoring him for 50 years of association with the Sisters of Saint Rose Hospital in Great Bend.

George Burket, Kingman, was elected a member of the Board of Directors of the American Academy of General Practice at the Academy's meeting in Chicago in September.

The annual meeting of the Kansas Association for Mental Health was held in Topeka in October. Speakers for the meeting included **H. St. Clair O'Donnell**, Ellsworth; **Thomas P. Butcher**, Emporia; **Frank Harris**, Wichita; and **Floyd Beelman**, Topeka.

Evalyn S. Gendel, Topeka, participated in a national conference on physicians and schools in Chicago during October. She discussed school health in Kansas, including special reference to the Kansas School Health Advisory Council and Symposium. Dr. Gendel is a past-president of the advisory council.



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the DOCTOR'S CALENDAR. Notice of the session is posted in advance to allow the physician time to make preparations.

DECEMBER

- Dec. 1 5th National Conference on the Medical Aspects of Sports, Portland, Ore. Contact: AMA Health Education Dept., 535 N. Dearborn, Chicago 10.
- Dec. 1-4 American Medical Association clinical meeting, Portland, Ore. Contact: F. J. L. Blasingame, M.D., 535 N. Dearborn, Chicago 10.

JANUARY

- Jan. 12-18 10th annual General Practice Review, Denver. Contact: Office of Postgraduate Medical Education, Univ. of Colorado School of Medicine, Denver.
- Jan. 20-23 *Cardiorascular Drug Therapy*—Hahne-
mann Medical College & Hospital, Phil-
adelphia.
- Jan. 18-23 American Academy of Orthopaedic Sur-
geons, Chicago. Contact: John K. Hart,
Exec. Sec., 29 E. Madison, Chicago 2.
- Jan. 22-25 Neurological Society of America, Phoe-
nix. Contact: C. H. Davis, Jr., M.D.,
Bowman Gray School of Medicine,
Winston-Salem, N. C.

FEBRUARY

- Feb. 17-19 American College of Surgeons sectional
meeting, Denver. Contact: S. J. Harbi-
son, M.D., 55 E. Erie St., Chicago 11.

POSTGRADUATE COURSES

- American College of Physicians postgraduate courses:
- Dec. 2-6 *Advances in the Medical Aspects of
Cancer*, New York
- Dec. 2-6 *Psychiatry for the Internist*, Los Angeles
- Dec. 9-13 *Environmental Medicine*, Boston, Mass.
- Jan. 6-10 *Nuclear Medicine and Radiation Biol-
ogy*, Los Angeles

- Jan. 27-31 *Newer Concepts in Internal Medicine*,
New Orleans
- Feb. 10-14 *Hypertension and Its Complications*,
Augusta, Ga.
- Feb. 24-28 *Recent Advances in Metabolic Diseases*,
New York City.

Registration forms and requests for information on the above courses should be directed to: Edward C. Rosenow, Jr., M.D., Exec. Dir., The American College of Physicians, 4200 Pine Street, Philadelphia 4.

American College of Chest Physicians postgraduate courses:

- Dec. 2-6 *Recent Advances in the Diagnosis and
Treatment of Diseases of the Heart and
Lungs*, Los Angeles
- Jan. 13 *Recent Advances in the Diagnosis and
Treatment of Diseases of the Heart and
Lungs*, Miami Beach

Contact Murray Kornfeld, American College of Chest Physicians, 112 E. Chestnut St., Chicago 11, for information and registration forms for the above courses.

University of Kansas School of Medicine postgraduate courses:

- Jan. 5-8 *Anesthesiology*—First Annual Seminar,
Univ. of Miami and Univ. of Florida
Schools of Medicine, Miami Beach
- Jan. 27-29 *Medicine and the Law: The Evaluation
of Disability*
- Feb. 10-14 *Medical-Surgical Clinical Symposia*
- Feb. 17-19 *Radiology and Radioactive Isotopes*
- Feb. 24-25 *Vectorcardiography*

For information on the above courses, contact The Department of Postgraduate Medical Education, University of Kansas School of Medicine, Rainbow Boulevard at 39th Street, Kansas City, Kansas.



R. DEAN APPLGATE, M.D.

R. Dean Applegate, 34, Roeland Park, Kansas, died October 7, 1963 at Providence Hospital in Kansas City.

Born in Benkelman, Nebraska, he had been a resident of the Kansas City area since 1957. He graduated from the University of Kansas School of Medicine in 1961 and served his internship at the St. Margaret Hospital, Kansas City.

Dr. Applegate was a veteran of the Korean War, serving with the rank of second lieutenant in the Infantry. He was a member of the Overland Park Christian Church, and various medical organizations.

Survivors include his wife, a son and three daughters.

LASLO K. CHONT, M.D.

Laslo K. Chont died on September 21, 1963, at his home in Winfield. He was 63 years old.

Dr. Chont was born on October 11, 1899, in Poroszló, Hungary, and came to the United States in 1934. He secured his medical training at the Academy of Medicine in Budapest and served his internship and residency in radiology in Hungary.

Before coming to Winfield in 1943, he was with the Kansas Tuberculosis Sanatorium at Norton.

He is survived by his wife and a sister.

The Kansas Medical Society—1963-1964

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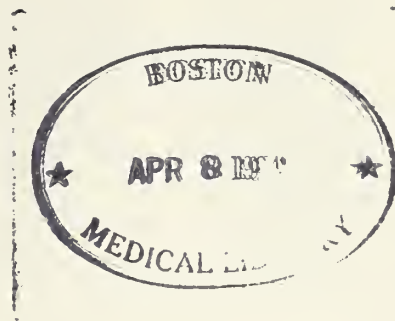
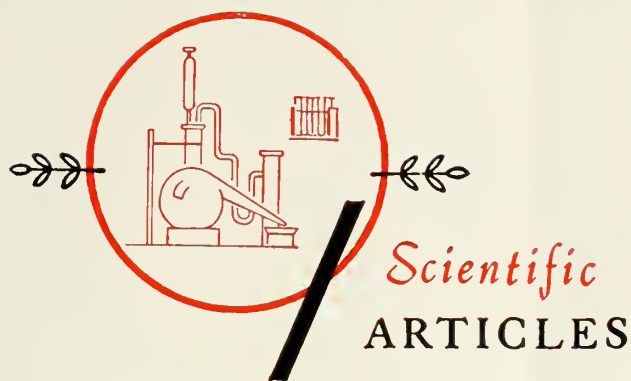
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X-Ray in Heart Disease

The Radiologic Findings in Mitral Stenosis

MARVIN DUNN, M.D., and

WILLIAM HAYES, M.D., *Kansas City, Kansas**

THE RADIOGRAPHIC APPEARANCE of the cardiac silhouette is often diagnostic of mitral stenosis even when the lesion is clinically insignificant. As the severity of the lesion increases, changes occur in the anatomic appearance of the heart and great vessels which reflect the disturbed physiology. These anatomic changes serve as a quantitative measure of the physiologic impairment.

Although the standard PA and lateral chest x-rays are often adequate, additional information can sometimes be obtained by cardiac fluoroscopy, as well as from x-rays taken in the right and left anterior oblique positions or with barium in the esophagus. This report summarizes the important x-ray findings of mitral stenosis.

Size and Shape

The characteristic x-ray feature of mitral stenosis is the "straight left heart border." In the normal heart, concavity is noted in the area of the main pulmonary artery and the left atrial appendage. When these structures become enlarged, the concavity is filled, producing a straight line from the aortic knob to the left ventricle (*Figure 1*). The aortic knob may be

smaller than normal if the mitral stenosis becomes severe enough to limit cardiac output.^{1, 2}

The heart size usually remains within normal limits in its transverse diameter until right ventricular enlargement occurs. The size of the left ventricle is normal in pure mitral stenosis. Severe enlargement of the right ventricle may cause enough posterior displacement of the left ventricle to suggest hypertrophy.

The salient roentgenographic features of mitral stenosis are reviewed. Careful evaluation of these findings is helpful, not only in establishing the diagnosis of this condition, but also in assessing its severity.

Left Atrium

The left atrium and left atrial appendage usually enlarge as the left atrial pressure becomes elevated, although left atrial enlargement can occur when the left atrial pressure is normal. Often the PA view shows only a suggestion of left atrial enlargement, but the lateral view with barium in the esophagus demonstrates conspicuous enlargement of this chamber and emphasizes the value of this technique (*Figure 2*). Occasionally this displacement of the barium-filled

* Dr. Dunn is Assistant Professor of Medicine and Dr. Hayes is an Instructor in Medicine at the University of Kansas Medical Center.

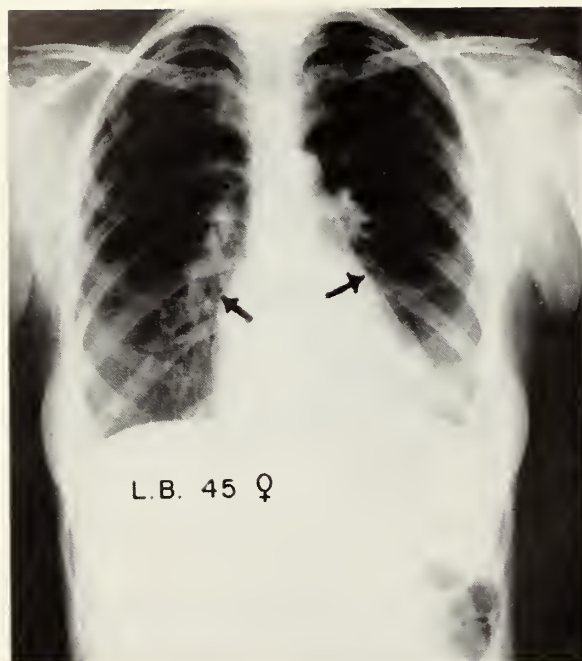


Figure 1. Note the straightening of the left heart border produced by fullness of the main pulmonary artery segment and enlargement of the left atrium. The arrows indicate the lateral margin of the left atrium.

esophagus is better seen in an oblique view than in the lateral view. Note that the left atrium displaces the barium column abruptly and that the displacement is rather high on the posterior cardiac shadow. This is in contrast to the lower, more sweeping displacement of the barium-filled esophagus that may be produced by enlargement of the left ventricle. However, when the left atrium is greatly enlarged, it may extend down to the level of the diaphragm in which case it might be mistaken for an enlarged left ventricle. A rightward displacement in the barium-filled esophagus occurs in the PA view although considerable posterior displacement is usually present before rightward deviation can be demonstrated.³

An enlarged left atrium can be recognized in the PA chest film when it creates an area of increased density. This so-called "double density" shadow can be seen through the main shadow of the heart (*Figures 1, 2 and 3*). If the left atrium is sufficiently enlarged it makes up a portion of the border of the main cardiac silhouette. This is most often seen on the right (*Figures 1, 2, 4 and 7*) where it may create a scalloping of the right heart margin as it overlaps the shadow of the right atrium.

Enlargement of the left atrial appendage may be identified as a separate arc between the shadow of the

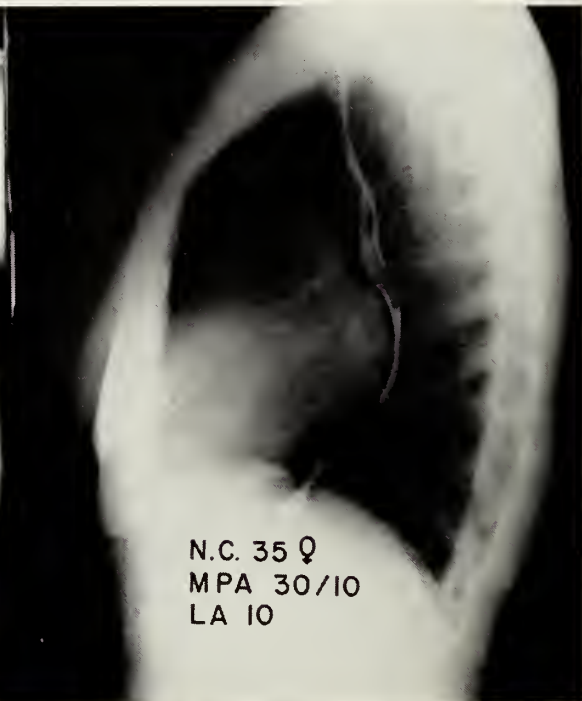
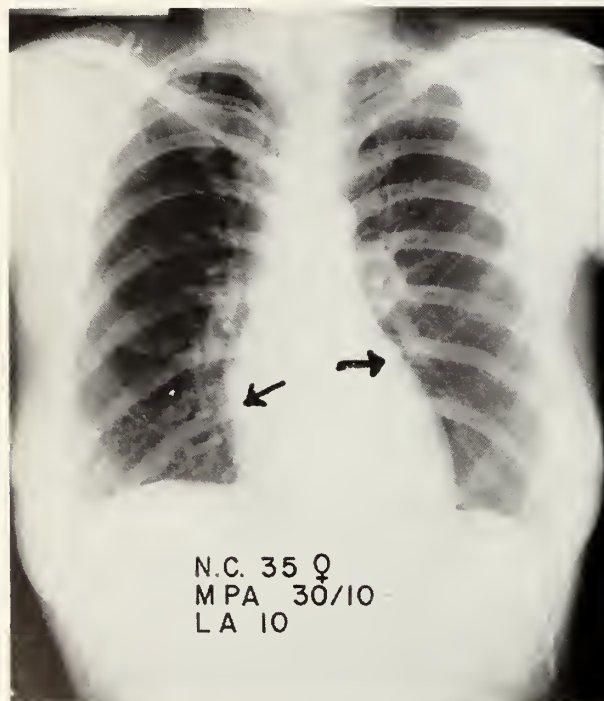


Figure 2. The left atrial enlargement which is suggested by the double density shadow in the PA view is conspicuously demonstrated by a lateral view with a barium swallow. The arrows indicate the lateral margins of the left atrium. The left atrial (LA) mean pressure was 10 mm. Hg. The main pulmonary artery (MPA) pressure was 30/10 mm. Hg.

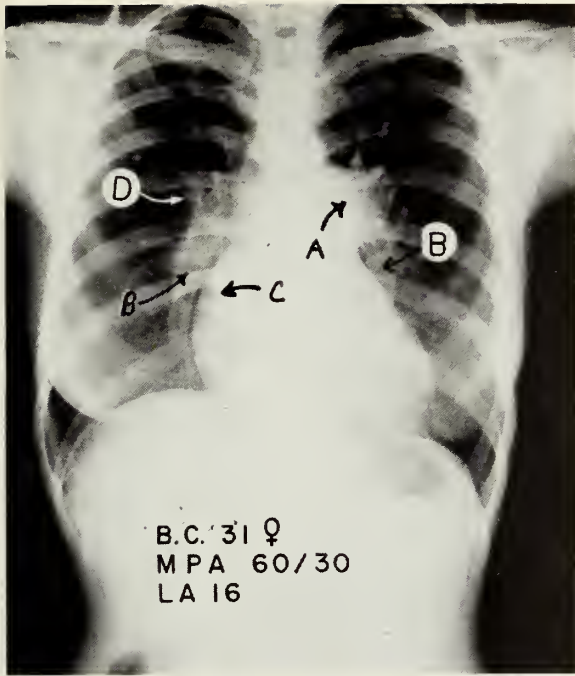


Figure 3. Arrow A indicates the main pulmonary artery. B indicates the primary branches of the pulmonary artery. C indicates the double density shadow created by the right margin of the left atrium. D indicates the main right upper lobe vein which can be seen to cross the right pulmonary artery and enter the left atrium. Note that the secondary and tertiary branches of the pulmonary artery are difficult to identify in contrast to the primary branches.

pulmonary artery and the convexity of the ventricle (Figure 4).

There is poor correlation between the size of the left atrium and either the degree of left atrial pressure elevation or the severity of the mitral stenosis.² This is because the left atrial size is determined by the distensibility of the atrial wall as well as by the pressure within the atrium. Very large or aneurysmal left atria are nearly always due to mitral regurgitation.⁷

Since the left atrium is immediately inferior to the bifurcation of the trachea, left atrial enlargement may cause an elevation of either of the main stem bronchi. The left is most frequently elevated (Figure 5).

Pulmonary Artery

The main pulmonary artery segment and its primary branches become enlarged as pulmonary hypertension develops, but the secondary and tertiary branches frequently become narrower (Figure 3).

Attempts have been made to correlate the severity of pulmonary hypertension with the size of the main

pulmonary artery or its primary branches.⁴⁻⁶ Efforts of this kind are limited by the variability of x-ray technique, the phase of the respiratory or cardiac cycle, as well as the circumstances under which the pulmonary artery pressure is measured. The pulmonary artery pressure can be estimated within a range of 35 to 40 mm. Hg. by these techniques. A closer correlation would be desirable.

Right Ventricle and Right Atrium

The right ventricle becomes enlarged with the development of pulmonary hypertension. This is best seen in the lateral or left anterior oblique view (Figure 5). In the PA view the transverse diameter of the heart can be seen to be enlarged but it cannot be determined from this view which ventricle is responsible for the enlargement. In the lateral view, the enlarged right ventricle obliterates the retrosternal space, whereas the left ventricle is inconspicuous. A false impression of right ventricular enlargement may be produced by a forward displacement of the right ventricle due to enlargement of the left atrium.^{1, 3}

The right atrium enlarges secondary to right ventricular overloading. The right atrial shadow is more conspicuous when it is displaced anteriorly and to the right by left atrial or right ventricular enlargement.

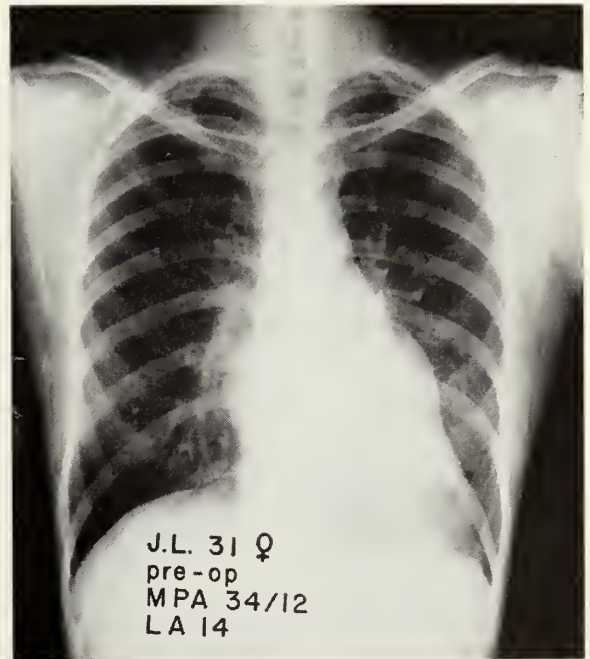


Figure 4. The prominent convexity in the mid-portion of the right cardiac margin is an enlarged left atrium. The arc in the left margin between the pulmonary artery and the ventricle is the left atrial appendage.

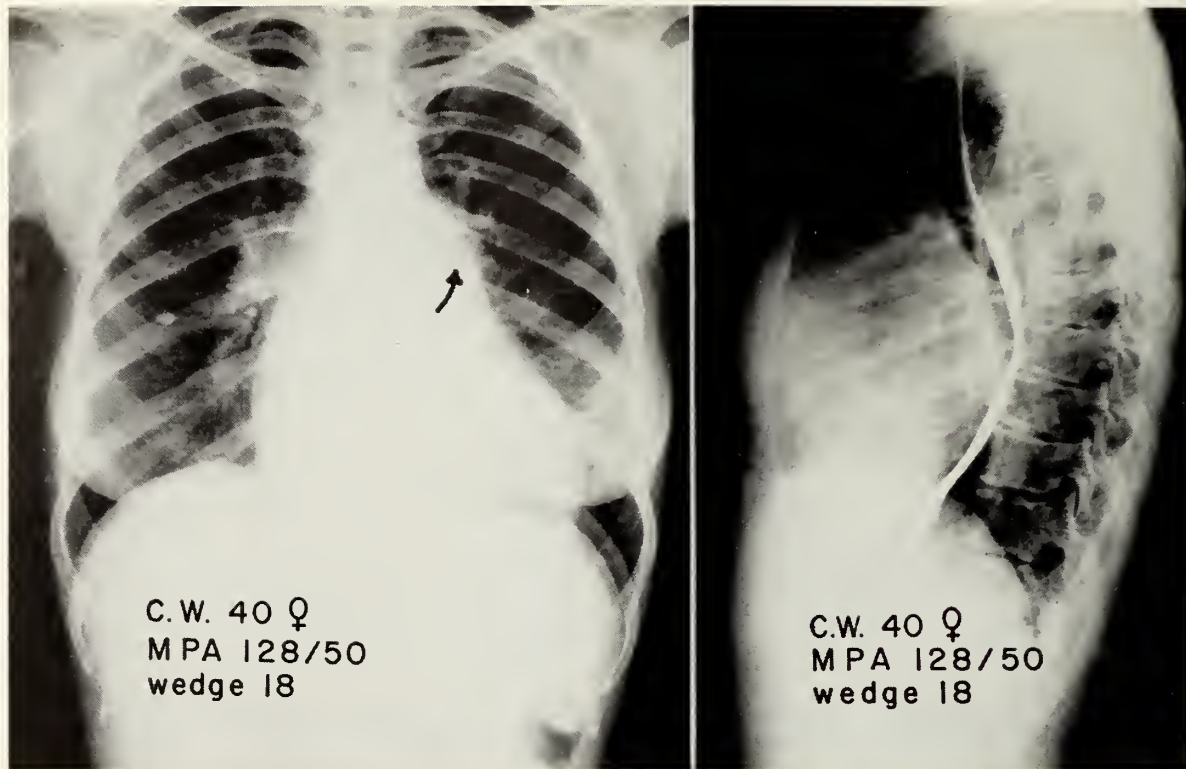


Figure 5. The arrow indicates the elevated left main stem bronchus which can be seen as a translucency in the area of the main pulmonary artery segment. The lateral view reveals an enlarged right ventricle obliterating the retrosternal space. The left atrium and pulmonary arteries are also enlarged, while the left ventricle remains inconspicuous.

Peripheral Lung Fields

The peripheral lung fields undergo a variety of changes as the pulmonary venous pressure rises. The pulmonary veins become dilated and later constricted. The pulmonary lymphatics become engorged. With more severe elevations of the pulmonary venous pressure, there is edema of the pulmonary parenchyma, pleural effusion, or frank pulmonary edema can occur.

The pulmonary veins have often been ignored because of difficulty in differentiating them from pulmonary arterial shadows. Several authors have described helpful points by which they may be identified.⁸⁻¹⁰ The upper lobe veins usually lie lateral to the corresponding arteries and tend to be wider than the arteries. They may run for several inches without bifurcating. The upper lobe veins usually show a typical Y-fork at about the level of the aortic knob. The main upper lobe veins in the hilar areas may sometimes be seen to cross the pulmonary arterial trunks prior to entry into the left atrium. The lower lobe veins are more difficult to identify but can often be seen in the right medial lung base as they ascend and enter the left atrium about two inches below the

level of the main pulmonary artery (Figures 3, 6 and 7). The pulmonary veins increase in size as pulmonary venous pressure rises.

When the pressure reaches about 17 mm. Hg. in the lower lobe veins¹⁰ and about 25 mm. Hg. in the upper lobe veins, venous constriction occurs and the veins become smaller.⁸

The B lines of Kerley may appear when the left atrial and pulmonary venous pressures rise to sufficiently high levels. These are horizontal lines which are seen in the lung bases. They usually occur in groups and measure 10 to 15 mm. in length and about 1 mm. in width (Figure 7). They usually do not appear until the left atrial mean pressure rises to about 20 mm. Hg.⁶ and are nearly always present with left atrial pressures above 24 mm. Hg.^{11,12} These lines may be transient, when they are due to dilated lymphatics or edema in the interalveolar septa; or may be permanent, when they are due to collagenous thickening and hemosiderin deposition in the interalveolar septa.¹¹ This septal thickening may also occur in pneumoconiosis, lymphangitic carcinomatosis, hemosiderosis, sarcoidosis, reticulosis, occasionally left ventricular failure, hilar lymphatic

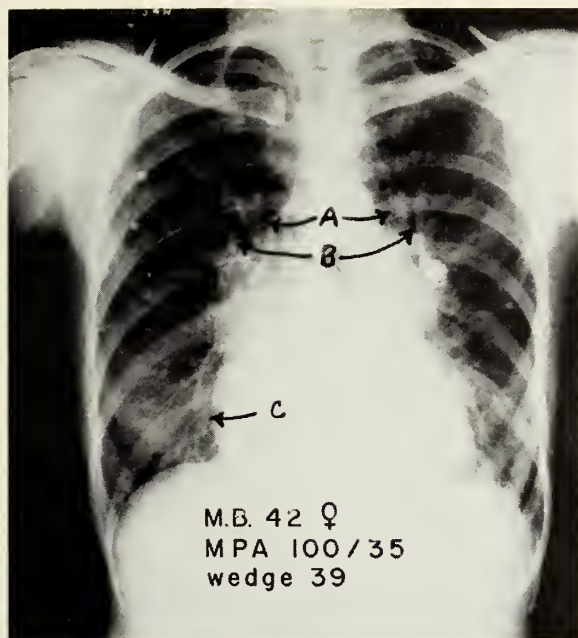


Figure 6. A indicates the pulmonary arteries to the upper lobes. B indicates the corresponding pulmonary veins. C indicates a right lower lobe vein which ascends near the cardiac margin and can be seen to enter the left atrium immediately above the point of the arrow. In the right costophrenic angle can be seen a group of short, thin, horizontal lines which are the B lines of Kerley.

block, or any other condition which produces pulmonary venous hypertension.⁶ However, the hemodynamic conditions necessary for the production of Kerley's lines rarely occur in any *cardiac* condition other than mitral stenosis.¹²

When the pulmonary venous pressure rises to such a degree that the pulmonary capillary pressure exceeds tissue osmotic pressure, transudation into the alveoli occurs, producing the picture of acute pulmonary edema (Figure 8).

Calcification of the mitral valve is easier to identify by cardiac fluoroscopy than on x-ray films (Figure 8). This calcification may occur in the annulus, at the commissures or as a diffuse deposition in the valve leaflets.³ Heavily calcified valves are more likely to be associated with important degrees of mitral regurgitation.² The extent of valvular calcification as well as the degree of mobility of the valve are of importance when the patient is being considered for surgery.³

Pulmonary hemosiderosis causes a fine granularity or stippling of the lung fields in 10 to 25 per cent of cases.^{2, 7, 12} On rare occasions nodules of ossification may be seen in the lung fields which on microscopic examination prove to be lamellar bone.⁷

Careful consideration must be given to interpretation of x-ray findings in patients who have undergone successful mitral valvotomy (Figure 9). This x-ray

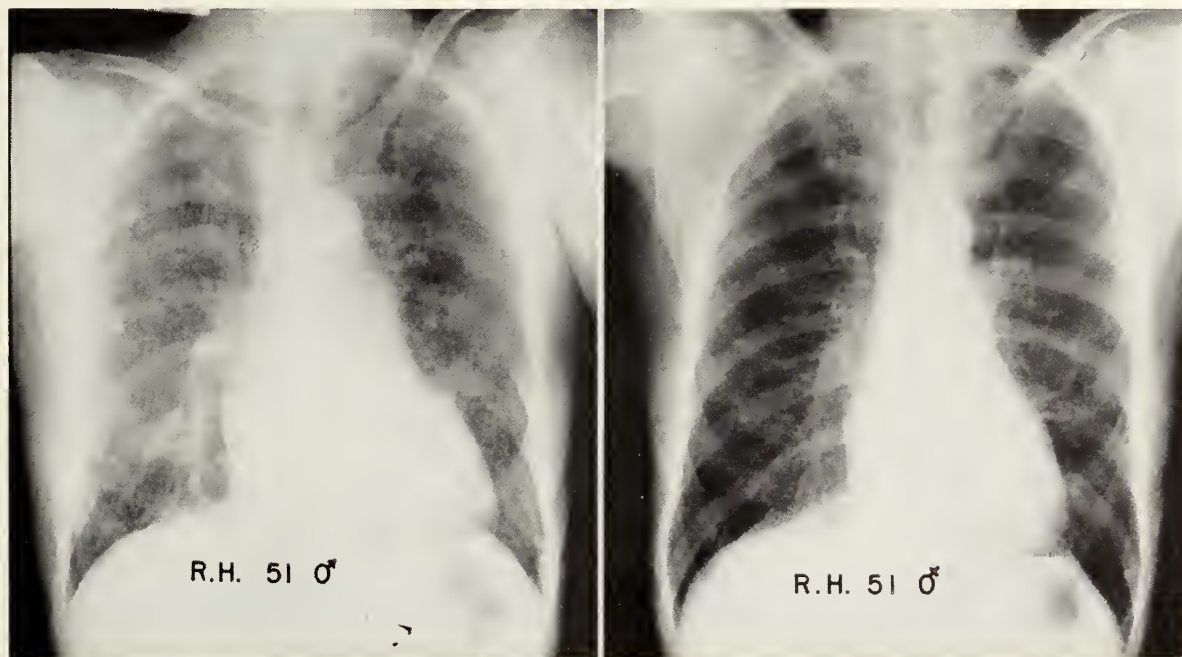


Figure 7. The film on the left reveals extensive pulmonary edema. Note also the scalloping of the right heart margin produced by left atrial enlargement. The film on the right, taken a few days later, demonstrates clearing of the pulmonary edema and a reduction in heart size.



Figure 8. The arrow indicates calcification in the mitral valve which can be seen as a curved row of nodular densities.

was taken seven years following mitral valvulotomy. At the time of this film the patient was virtually asymptomatic and the cardiac catheterization findings nearly normal. It continues to show enlargement of the main pulmonary artery, left atrial enlargement, a prominent pulmonary venous pattern, and B lines of Kerley in the right lung base. This film demonstrates that the radiologic findings in mitral stenosis may persist long after successful surgical alleviation of the valvular stenosis. For this reason the radiologic findings may be of no value or actually misleading in assessing the status of a postoperative patient.

References

1. Dealy, J. B.: Mitral Valve Disease: A Radiologic Approach to a Physiologic Diagnosis, *New Eng. J. Med.* 254: 825, 1956.
2. Wood, P.: An Appreciation of Mitral Stenosis. Part II. Investigation and Results, *Brit. Med. J.* 1:1113, May 15, 1954.
3. Lehman, J. S. and Curry, J. L.: A Correlation of Roentgen and Surgical Findings in Two Hundred Cases of

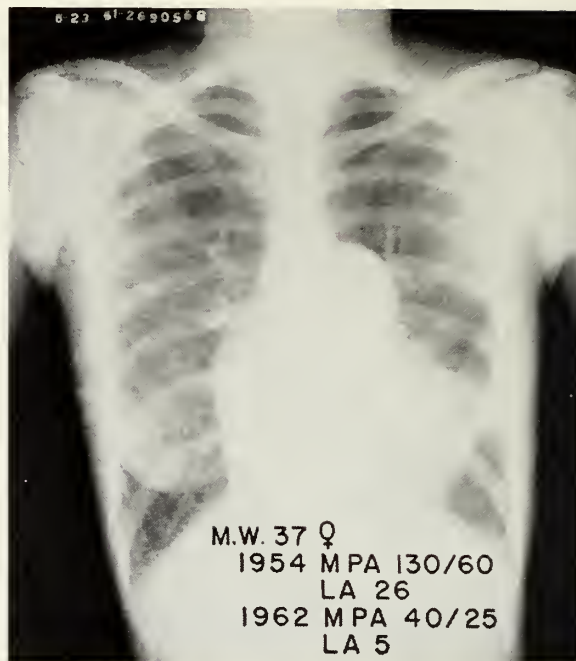


Figure 9. This x-ray was taken eight years following a successful mitral valvotomy. The patient was asymptomatic and had normal cardiodynamics at the time of cardiac catheterization in 1962.

Rheumatic Mitral Valvular Disease, *Am. J. Roentgenol., Rad. Therapy and Nuclear Med.*, 71:599, 1954.

4. Jacobson, G., Schwartz, L. H. and Sussman, M. L.: Radiographic Estimation of Pulmonary Artery Pressure in Mitral Valvular Disease, *Radiology* 68:15, 1957.

5. Moore, C. B., Kraus, W. L., Dock, D. S., Woodward, E., Jr. and Dexter, L.: The Relationship between the Pulmonary Arterial Pressures and Roentgenographic Appearances in Mitral Stenosis, *Am. Heart J.*, 58:576, 1959.

6. Johnson, P. M., Wood, E. H., Pasternack, B. S. and Jones, M. A.: Roentgen Evaluation of Pulmonary Arterial Pressure in Mitral Stenosis, *Radiology* 76:541, 1961.

7. Steiner, R. E. and Goodwin, J. F.: Some Observations on Mitral Valve Disease, *J. Fac. Radiol.* 5:167, 1953.

8. Simon, M.: The Pulmonary Veins in Mitral Stenosis, *J. Fac. Radiol.* 9:25, 1958.

9. Kerley, P.: Lung Changes in Acquired Heart Disease, *Am. J. Roentgenol., Rad. Therapy, and Nuclear Med.* 80: 256, 1958.

10. Ormand, R. S. and Poznanski, A. K.: Pulmonary Veins in Rheumatic Heart Disease, *Radiology* 74:542, 1960.

11. Rossall, R. E. and Gunning, A. J.: Basal Horizontal Lines on Chest Radiographs: Significance in Heart Disease, *Lancet* 1:604, May 5, 1956.

12. Grishman, A., Jick, S. and Khilnani, M. T.: The Pulmonary Radiographic Changes of Mitral Disease: Mitral Lung Disease, *J. Mt. Sinai Hosp.* 25:291, 1958.

Your TB association, through Christ-mas Seals, helps protect everyone from tuberculosis and other respiratory diseases. No one is safe until all are safe.

People-to-People

A Kansan in Karigiri

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TO THE BEST OF MY KNOWLEDGE, there is not a single case of leprosy in the state of Kansas, but there are some ten million cases in the world today. A fair percentage of these are to be found in southeast Asia. The incidence of leprosy in south India is thought to approximate 4 per cent of the total population (that's 40 cases per thousand, a rather startling figure).

The acid-fast lepra bacillus has for many years been fairly well accepted as the infecting organism. The disease apparently is infectious yet it is known to be the least contagious of all communicable diseases. The bacillus has never been cultured in laboratory or experimental animal. Repeated attempts to inoculate human volunteers have failed. Malnutrition, vitamin deficiency, poor sanitation, plus a thousand other factors, including evil spirits, have all been incriminated as etiologic agents. Excellent investigative work in many phases of leprosy is currently under way at Harvard, Johns Hopkins, Tulane, and Fort Leonard Wood in the Philippines, to name a few. One can only hope that the riddle of Hanson's Disease will soon be solved.

The Disease and Treatment

We were dealing, at Karigiri, with an affliction of insidious onset. A vast reservoir of undiagnosed, sub-clinical cases is known to exist in endemic areas. Large numbers of these cases recover spontaneously and unrecognized by either patient or doctor.

In a second large group (the tuberculoid type—those most subject to peripheral nerve involvement) leprosy is also self limiting in nature; yet many of these develop paralysis and cutaneous sensory loss. Here protean reactions are commonly seen, suggesting bizarre and ill-defined immunochemical processes akin to erythema nodosum and auto-sensitivity.

The third large group includes the lepromatous or disseminated form of the disease. These are the cases with widespread cutaneous and mucous membrane involvement who develop facial deformities. (In all probability, all three groups are stage manifestations of the same disease.) These are the sickest cases. It is said that leprosy rarely kills. This is essentially true.

* Dr. Brooks spent six months in India as a Fulbright grantee. He went upon invitation from the Christian Medical College, Vellore, South India. Further financial assistance was generously contributed by a group of physicians and the Presbyterian Church, Kansas Synod.

Historical literature is rife with inaccuracies concerning leprosy. Cutaneous and deforming diseases ranging from psoriasis to polio were misdiagnosed as Hanson's Disease.

Only within the past decade did Dr. Paul Brand of Karigiri convince the world's leprologists that leprosy deformities result largely from secondary infection

When we learn of conditions in some other countries we are, or should be, extremely grateful for our own good fortune. A look at India, through the eyes of Dr. Brooks, is an armchair means of obtaining some first-hand knowledge of this great country which occupies such an important part of the world's state today—Editor.

following minor injury to the anesthetic extremities. Patients walked miles to Karigiri on these bare, anesthetic feet only to arrive with gaping ulcers and swollen legs.

Each Monday and Friday, surgical clinics were held. Here was done the heart-rending task of sorting cases amenable to surgery and rehabilitation from hundreds of others. All patients were given medical treatment as long as was indicated. Some were treated with prolonged immobilization in plaster casts; others in walking plaster casts; some with Unna's or latex boots, and a few each clinic day were hospitalized for intensive medical and surgical treatment.

The latter were usually admitted to the "ulcer cottage" where upon my arrival, 25 acutely ill patients ate, slept, lived and occasionally died on their straw mats on the cement floor.

Routine physical examinations and laboratory tests (including skin biopsies) were done on most patients. Some were treated for scabies. Many had intestinal parasites often accompanied by severe anemias. Multiple nutritional deficiencies, vitamin and protein, were also commonplace. Complicating bronchiectasis or active pulmonary tuberculosis were not unusual. These were society's outcasts; the unemployed and the unemployable; the beggars as well as a few of the rich.

Acute abscesses were drained, sloughing tendons

debrided, sequestering bone curetted or removed. Antibiotics were given when acute infection could not be controlled by the above time-honored, surgical means. Adequate diets were given, physiotherapy and occupational therapy were started. Large ulcers were skin grafted (on the floor of the ulcer cottage, at first). Patients with deformities of the feet were fitted with special, rubber-soled sandals which were developed and made at Karigiri. Those with correctable deformities of foot, hand, or face were operated, if their leprosy was quiescent, arrested, or cured.

Commonest reconstructive procedures included surgery for dropfoot, clawhand and lagophthalmos. Multiple tendon transplants were done on hand and foot. Most difficult was corrective surgery for contracture and instability of the thumb following combined median and ulnar nerve involvement. Eyebrow reconstruction with free graft and temporal artery pedicle was routine. Postnasal skin graft inlay, and nasal bone grafts, ear reconstruction and an occasional face lift were tried on arrested lepromatous cases. The surgery was endless, fascinating, and challenging, and always done with a view to either improving existing techniques or working out new ones.

A word about drug therapy. Sulfones (chemically related to the sulfonamides), isoniazid, streptomycin and a number of promising newer preparations have lent sufficient encouragement to leprologists the world over to cause the United Nation's World Health Organization to take on Hanson's Disease on a global scale. Suffice it to say, leprosy is no longer the har-binger of despair it was even 20 years ago. So much for leprosy. What were we doing in India?

I recall watching a documentary television program some time ago wherein Peace Corps volunteers were interviewed on the job. The question which momentarily stumped each volunteer was, "Why did you join the Peace Corps for foreign service in an under-developed country?" Answers were varied and numerous. But the most interesting, and I believe now the most truthful, was given by two engineers in Tanganyika. Both stated in all seriousness, "Our reasons seem to change the longer we stay here." At first this brought lots of laughs. But on further questioning, it became obvious that these young men had good reason for their answer to the query. In the light of their actual experience in the field, so to speak, they had found themselves more on the receiving than on the giving end of the deal. This happens!

Well, What Did We Do?

Our family's interests were many and varied. The three youngest children attended an excellent American-plan boarding school in mountainous Kodaikanal, 300 miles from Madras. Herb Krause from Newton, Kansas, was principal of the school. Children of mis-

sionaries, Ford Foundation, Fulbright, A.I.D., embassies and many others from all over southeast Asia were there, as well as a number of Indian students. Our youngsters stacked away intangible knowledge they could never have found here in the States. They came to know another part of the world so different from our own that they will never forget it. They saw hungry people, real poverty, next door to untold wealth, and came to question the whys and wherefores of this. They studied by book, field trip, and daily observation what India was doing about its economic, political and social problems. They observed the effects of the population explosion first-hand in Asia where it is a current problem, not a theory of a thing of the future.

Our eldest daughter studied three months in an Indian University—living with Indian students. She went to Delhi with us, interviewed Nehru, Rhadakrishnan, President of India; visited the Lok Sabha, the Indian lower house of Parliament; attended lectures by ministers and deputy ministers of the Indian government and numerous other top men in the fields of politics, government, economics, planning, health, agriculture, and human relations—all brilliant Indians educated at home and abroad. She traveled Indian trains (an experience all its own), planes, jukas, and buses. We hope the children proved the Foreign Service adage "youngsters are our best ambassadors."

My wife, Anne, was busier than the rest of us. She raised hamsters and guinea pigs for the experimental work in the animal house at Karigiri. An excellent technique for animal brain inoculation and living tissue-culture, sent by Dr. Robert Chase of Yale, was worked out for the hospital. She set up the animal house operating room and laboratory. In six months she taught the attendant, a 35-year-old man with never a day of schooling, to read and write English. He now reads and writes Tamil, his native language, as well. She cooked, sewed, visited, talked and befriended all the Indians in sight, and then some, with time to help me and even do considerable bird watching. In short, she made friends and did the international relations bit while I worked—and played a little tennis.

After two weeks of settling in, as they say, I began my surgical work at the leprosy hospital. For a while, this consisted primarily of a period of training and studying for I had never seen a case of leprosy before. I operated three days a week, made rounds, held clinics, attended lectures and discussion groups, thumbed books and generally familiarized myself with the problems at hand. I voluntarily assumed responsibility for the "ulcer cottage" which was the "back room" of the hospital. If any material contribution was made to Scheffelin Hospital, it was in this

area. We changed this to what I like to think of as the brightest spot in the hospital.

We painted the ward with cheerful, washable, light green paint; a large partitioned veranda was built; wheel chairs were provided; new septic tank lines were installed, and the latrines washed clean twice daily. Metal cots were purchased and the patients moved from straw pallet to proper bed. Improved techniques for dressings and for minor surgical procedures were introduced. Mosquito control was reinstated for the entire hospital area. Overgrown vegetation was cut down to let in light and air. Vigorous, active, treatment for the patients was instituted. The patients brightened, helped us, helped one another, laughed, walked, recovered, and worked. None of this could have been accomplished without Mr. Dorippen, the Indian charge nurse for the area, whose enthusiasm and intelligence was unbounded. The surgical work went on as usual, of course.

In October, I accepted the position of chief surgeon for Karigiri. Several major shifts of surgical staff at Karigiri and Christian Medical College coincided with this change in my own status. Many changes at the hospital were accomplished with the entire hospital staff working as a rejuvenated team whose cooperation made working with them a joy. The physical plant was improved with funds generously given us by friends at home as well as additional contributions from the Swedish Red Cross. Patient care was improved, the patients' outlook brightened, new schedules were set up for all services including the departments of medicine and physiotherapy. The outpatient clinics were changed so that their schedules fit closely with those of the other hospital departments. A few shifts in personnel, assignment of specific responsibility, and changes in the plant were carried out.

The program for the visiting surgical trainees was reorganized and I believe will now be more effective and acceptable. Dr. C. K. Job, whose dual role as Karigiri Hospital superintendent and chief pathologist at Christian Medical College in Vellore did not permit him to devote sufficient time to the Karigiri work, was pleased to have someone who could implement many of his ideas.

I hasten to add that we were ably assisted in all of the above by Dr. Christopher Heinz of Switzerland and the two World Health Organization trainees from Thailand.

Department heads, paramedical workers, and others volunteered information to us, such as, "the whole place has taken on a new enthusiasm." Since returning to the States, I have received numerous letters from the staff at Karigiri telling me that the reorganization work has paid real dividends. The hospital appears

to be running smoothly. The new chief of surgery has arrived and taken over a "going concern."

We Receive More Than We Give

A final word about the International Exchange of Persons Program. We believe that it works somewhat in the reverse manner from what we had originally thought. This is not to say International Exchange or People-to-People is not effective for it is very much so and very much worthwhile. Yet, I do not believe that anyone in foreign service should delude himself into thinking that he or she is giving to his host country, for in fact, we all take away much more than we can possibly give.

If this attitude is engendered in the minds of groups going from the United States and coming to the United States, then the program will be eminently successful. The real strength of these ventures, it seems to me, lies in the development of a mutual understanding of our different cultures, mores, and so forth; then the broadcasting of that understanding after one's return to his own country. In my opinion the entire experience would or could be made much more meaningful if the overseas traveler were oriented in this light prior to leaving his own country.

As I said before, our reasons for going to India were many: medical, sociological, educational, maybe "do gooder"—maybe not. But, we honestly believed at the start (and still do, more fervently than ever), that international understanding and the exchange of foreign persons, or better, "People-to-People" is good stuff.

Well, what does all of this mean—what did we really accomplish?

In terms of the world's problems, nil. In terms of India's problems, also nil. In terms of Karigiri's problems, maybe something. In terms of a few individuals with whom we had close contact, perhaps a little more.

We six are very much wiser for our time spent away. My own experience has been immeasurably enriched in both knowledge and understanding.

Who knows but that we might have left a bit of ourselves with them.

People are the same the world over and we figure it did no harm to let a few Indians know that we were vitally interested in their world as well as in our own.

Thomas Edison, at 26, refused an operation that might have restored part of his hearing. He preferred things quiet.

What is noise? Noise, says the Acoustical Materials Association, is simply unwanted sound.

Obstetrical Data Processing

The Computer as an Obstetric Data Retrieval Device

EUGENE W. J. PEARCE, M.D., *Shawnee Mission*

IN 1961 DOUGLAS MARCHANT pointed out in an article on "Medical Records" the inaccessibility of the material on those records for scientific and teaching purposes. He discussed at length the possibilities of the digital computer as a data retrieval device for clinical material.

Every hospital, from the modest community hospital, to the large metropolitan medical center, accumulates over a period of time, a vast number of cases which undoubtedly form a rich mine of clinical material to guide our professional conduct. At present, this treasure trove is buried under mountains of paper. At the very time that records are improving, paradoxical though it may seem, the information on the records appear to be less and less available for scientific studies. The accrediting people, medical record committees, and record room librarians see to it that charts are complete, detailed and voluminous. Indeed, it would appear that paper work has become an end unto itself.

Indexing and coding of charts is properly viewed as a data retrieval function. The Standard System of Nomenclature was first published in 1931, and still is the chief mechanism for selecting a group of records for study.

With the advent of the punch card, it became apparent that limited amounts of data could be transferred to a retrieval system that would allow the investigator to recall that information quickly without referring directly to the clinical record. A group of institutions in the East established the Obstetrical Data Cooperative in 1950. Each of the ten participating hospitals causes to be marked an 80 column code sheet of each obstetrical case. The code sheets are sent to the processing center for key punching. The Cooperative then uses the cards for statistical analysis. Hellman wrote the first paper on Pitocin from this reservoir in 1957.

The Commission of Professional and Hospital Activities in Ann Arbor, Michigan, organized in 1950, processes medical, surgical and obstetric records on a similar basis and prepares statistical summaries for the individual hospital record room. PAS is now handling over two million records per year on punch cards.

Recently, the digital computer has been used as a

data retrieval device for obstetrics. The AMRF Perinatal Mortality Study based in Philadelphia uses a Univac, a product of Remington-Rand, and anticipates the processing of some 500,000 records in 1962.

However, in all of these data processing systems to date, including those which use the computer, the amount of information is severely restricted, usually

In spite of improved records, clinical material is only poorly available to the clinician.

The digital computer can make accessible to us vast volumes of information from clinical records.

To use the computer, obstetrical data must be transferred to machine language.

To facilitate this transfer, a combination code sheet-labor record has been presented.

A sample analysis has been presented.

Possible uses of EDP have been discussed.

within the confines of one punch card. This means that only 80 variables in IBM systems, and 90 in Remington-Rand, are coded because this is the standard sized card used by their respective systems.

Electronic Data Processing

The digital computer processes information by means of simple arithmetic operations of addition, subtraction, division and multiplication. In addition, it processes a comparative function in terms of an equal to, more than, or less than synthesis. These reasonable operations are basic to any discipline. When reasonable operations are managed by mechanical means there are present the elements of a data processing system. If a digital computer is used to perform the operations, the system is called electronic data processing or EDP.

EDP is applicable to every discipline from Accounting to Zoology and everything in between—including Obstetrics.

Let us consider Obstetrics as a data processing system. If all the significant information on a clinical record is available to the computer it can be instructed to make diagnoses, tally statistics, make correlations, figure percentages and do all the other reasonable operations by which we code charts, write papers, and manipulate clinical data. The set of written instructions given to a computer is called a program. Programs are permanent. Once written, they never need be re-written. This brings up the delightful possibility that a machine could code our charts for us.

As an example, let us suppose that a computer record contains all the information that a complete obstetrical record contains. The computer could be instructed to scan the records and by means of its "equal to, greater than, or less than" ability, determine whether levels of blood pressure, albuminuria, edema, weight gain and other symptoms and signs are present to warrant the diagnosis of toxemia, and to classify it as to type and severity. Any diagnosis could be so recorded and programmed.

Coding of Information

There is no doubt that all coding and statistical reviews as well as prospective investigative studies could be handled by modern high speed EDP techniques. The problem is input.

In order to achieve this state of grace, obstetrical information must be turned into machine language. This is numbers, or by clever manipulation of numbers, letters of the alphabet. Obstetrical data must, in other words, be coded so that it can serve as a computer input. The flow sequence of input for EDP goes as follows:

1. Source document (Obstetrical record in this case)
2. Code sheet
3. Key punch

Punch cards can be fed directly into the computer or can be transferred to paper or magnetic tape.

With this sequence, data processing increases rather than decreases the amount of paper work. The critical question now arises: "Who will mark the code sheets?" In data processing systems now in use (PAS, Obstetrical Data Cooperative, and various University programs), it is the resident, medical student, code clerk, or record room staff. It is someone other than staff physicians and is a separate step in record processing. This necessarily limits data processing and the digital computer to those medical facilities with the money and people available to mark code sheets. Most babies are delivered at private hospitals and to satisfy the voracious appetite of the computer for data, the private hospital will need to be brought into the fold.

How can the computer be harnessed to reduce

paper work instead of increasing it? Clinical people are accustomed to working with forms and nowhere more than in obstetrics. The form calls attention to important information and provides a sort of shorthand for recording that information. In other words, data on labor and delivery is coded and the forms that are used are primitive code sheets.

The solution, therefore, to the problem of making the machine work for us instead of vice versa is to consolidate steps one and two in the data processing sequence, i.e., make the clinical records true code sheets. As the record is marked, so is the code sheet. If this can be done, it has several inherent advantages. All the important information can be fed into the data processing system and not a highly restricted, refined portion of it. In addition, it will be fresh data, recorded at the time the observation is made.

Study

Construction of such a record was begun in October, 1961, by collecting labor records from various hospitals, code sheets, codes, the Standard System of Nomenclature, and textbooks. These references were necessary to determine what was important to record and how it was recorded. Then began a laborious process of constructing the record by hand with pencil, paper, ruler and most important—eraser.

It should be obvious that construction of such a form makes several demands:

1. The code sheet should resemble a labor record as much as possible in order that clinical people will recognize it as such.
2. The technique of marking should be obvious at a glance or with very little instruction.
3. The response in any given situation should be coded or categorized so the possibilities are covered.
4. The vocabulary of the data processing system must be on each record in order to avoid cumbersome reference to a code book.

All of these demands on the record are in the interest of acceptability. The common denominator is the labor nurse in a private hospital. The record keeping system cannot be so arcane that only a select, highly instructed group can be trusted with record keeping.

A code sheet-labor record was put into use at Baptist Memorial Hospital on April 1, 1962. Baptist is a private, voluntary hospital without house staff. The nurses follow labor and mark the labor record. There was a one hour orientation session, instructing the nurses in recording techniques prior to use of the record. It soon became apparent that there were many inadequacies in the original record. Consequently a revision was begun and put into use in early September of 1962.

The revised version contained a duplicate with NCR paper so that every mark made on the labor record was transferred to a duplicate underneath. The original serves as a key punch document and the duplicate is retained as the clinical record (*Figures 1 and 2*).

In the upper right hand corner of each form is a rectangle for the Addressograph stamp. This is not key punched, nor is any information recorded under "Nurses Notes." What information is to go on the electronic record is a matter of judgment, and perhaps some of the information excluded under Nurses Notes should be key punched. Already, it is apparent that there are inadequacies in this record and that a revision is in order. It is realized that this is only a record of labor and that many important obstetrical parameters cannot be recorded. These are to be recorded on other portions of the obstetrical record.

After the revision was put into use at Baptist, there was an additional one hour orientation period. This then became the standard record of labor.

There are five basic ways to code this record:

1. Direct recording of numerical form. Age, parity, fetal heart rate, blood pressure, and a host of other functions are customarily recorded thusly.

2. Alphabetical code. Some of these are naturally occurring codes such as IV, IM, MG, CC, etc. Others had to be constructed such as the code for character of labor contractions—W, F, and H for weak, fair and hard.

3. Numerical choice of one of a column of choices. This is similar to taking a multiple choice test in which only one response is correct or possible. This applies to such functions as the Rh factor, type of episiotomy, method of delivery and many others.

4. Checking one or several of a list of closely related choices. This is the technique of recording purpose of admission, birth canal lacerations, and placental abnormalities. An individual placenta can have none, one, or any combination of these abnormalities. This technique is extravagant in terms of key punching, but it saves space on the record.

5. Direct recording of a relatively large, unrestricted vocabulary. This applies only to medications. The number and variety of medications used in labor is so large that it was considered impossible to establish any workable code. The first five letters of the drug are key punched. It is presumed that no two medications will begin with the identical first five letters and so all drugs will be distinguishable by the computer.

A card design was then set up with the people from IBM. This record calls for five basic cards. Card 1 contains most of the admission information. Card 2 contains the remainder of the admission information and the first stage summary. Card 3 represents one line of observations during the first or second stages of labor. On card 4 is recorded the delivery of the baby, and the third stage of labor fits nicely on card 5.

Each delivery, therefore, calls for a minimum of five cards. The total number of cards is dependent upon the duration of labor and the number of observations during the first and second stages.

An instruction sheet was then made out for the key punch operator. The response expected in each area in terms of numerical or alphabetical choice was written down. The key punch operator need know no Obstetrics, but only what code should be recorded where.

A group of 31 unselected records was then submitted to the Service Bureau Corporation for key punching. These were the duplicates of the actual labor records and were not "doctored," literally or figuratively, except to make certain that the hospital number was on each record. The total number of cards was 363, or about 12 cards per record.

Then a programmer from the local IBM office wrote a simple program analyzing a few factors in the second and third stages of labor according to age groups. This analysis was not intended to be scientifically meaningful, but merely to demonstrate the technique. It must be noticed that there are 30 placentas and 29 babies, an obvious error in recording or key punching (*Figure 3*).

This analysis was done on an IBM 1402 which can read 800 cards per minute and is equipped with a high speed printer which writes 600 lines per minute. The program of 100 cards was read by the machine in eight seconds and the data cards required about 30 seconds. The analysis consists of roughly 30 lines so that it required three seconds to print. The time consumed by this process, therefore, totalled 41 seconds (*Figure 4*). A little calculation reveals that the 1402 could print out this information on 25,000 records (all the deliveries in the Kansas City Metropolitan area) in detail in rather less than an eight-hour day.

Thus, a computer analysis, however pedestrian, was achieved starting from a clinical record made out by staff nurses in a private hospital with no additional help by clinical people, and using standard data processing techniques.

Comment

The use of a digital computer for processing of obstetrical records opens up a new order of magnitude in management of clinical information. There are three possible uses.

The Standard System of Nomenclature or any other code can be programmed. Each chart could be coded by the computer and it would only be necessary for the physician to check the record to see that the machine is correct and sign his name to the record. It should be obvious that unless all the elements of a particular diagnosis are recorded on the computer that

Hosp. _____		Hosp. No. _____		Age _____	
Gr _____		Para _____		Admitted _____ M _____	
LMP _____		EDC _____		Ht _____ inches Wt _____ pounds	
Pains		Bleeding		Membranes	
0. None	0. None	0. Intact	0. Intact	0. Intact	0. Intact
1. Reg.	1. Show	1. Rupt.	1. Rupt.	1. Rupt.	1. Rupt.
2. Irreg.	2. Minimal	2. Quest	2. Quest	2. Quest	2. Quest
3. Hard	3. Moderate				
	4. Heavy				
Pain began _____		Bleeding began _____		Membranes _____	

FIRST STAGE

In recording type of examination, consistency of cervix, quality of pains, status of membranes presentation, and route of administration of medication, write ONLY the letters in capitals.		Code if not heard, or doubtful	Rect. Vag. Abdominal Double or setup Other	In cm. 0-9 Do not code C, 10, AC etc.	Soft Normal Firm Hard	Long. est. inter. val in min.	Intact Rupt. Ques. Ceph. Ann. Breech. Sp. CMpd. Floor rapt. Quest	USE NAME OF DRUG WHICH IS COMMONLY ACCEPTED:	MG GR CC Units	IV IM Hypo PO Drip Rect Dcd	
Date	Time	Blood Pressure	FHT	Type Exam.	Cervix	Pains	Sta- tion	Medication	Am't.	Units	Rt.
/ /	: M	/	1		Os Eff	Fre Qual		Type			
/ /	: M	/	2								
/ /	: M	/	1								
/ /	: M	/	2								
/ /	: M	/	1								
/ /	: M	/	2								
/ /	: M	/	1								
/ /	: M	/	2								
/ /	: M	/	1								
/ /	: M	/	2								
/ /	: M	/	1								
/ /	: M	/	2								
/ /	: M	/	1								
/ /	: M	/	2								
/ /	: M	/	1								
/ /	: M	/	2								

NURSES NOTES

Name _____		Per Chair ()		Cart ()		Amb ()	
Ob _____		Ped _____		Prep _____		Enema _____	
T _____		P _____		P _____		P _____	

PAGE 2

FIRST STAGE SUMMARY

BAPTIST MEMORIAL HOSPITAL

For Vertex use: BA LOA LOT LP OP POP ROT ROA
For Grema use: BA LOA LBT LBP BP RBP RBT RBA
For Brow use: FA LFA LFT LFP FP RFP RFT RFA
For Face use: MA LMA LMT LMP MP RMP RMT RMA
For Breach use: SA LSA LSP LSP SP RSP RST RSA
For Transverse use: TRA For Compound use: CPD

Began at	C/C at
0. Spont	0. Unknown
1. Amniot.	1. Rect.
2. Procin	2. Vag.
3. Both	3. False labor
4. Enema	4. C/S
5. Other	5. On admission

W : — — — — —

SECOND STAGE

Date	Time	Blood Pressure	FHT	Type exam.	Pains		Stor- tion	Mem- branes	Position	Medication			Rt.	hrs.	minutes	NURSES' NOTES
					Fre	Qual				Type	Amt.	Units				
/ /	:	M /	1							1						Nurses
			2								2					Scrub
/ /	:	M /	1							1						Circulations
			2								2					
/ /	:	M /	1							1						
			2								2					
/ /	:	M /	1							1						
			2								2					
/ /	:	M /	1							1						
			2								2					
/ /	:	M /	1							1						
			2								2					
/ /	:	M /	1							1						
			2								2					
/ /	:	M /	1							1						
			2								2					

The baby was delivered by Dr.						at _____ M / _____		after a second stage of _____ hrs. _____ min.	
who is	as a	if a breach	by means of	No fundal pressure	No rotation	0. No flexion	0. None of these	0. No de-structive procedure	Complications
0. Direct 1. Left 2. Right 3. Obs. C 4. Anes. 5. Resident 6. Nurse 7. Other	0. Occ 1. Bregma 2. Frontum 3. Mentum 4. Sacrum 5. Scapula	0. Not breech 1. Frank 2. Complete 3. Single 4. Partial 5. Double 6. Total ext. 7. Version 8. Knee	0. Spont. 1. Low F 2. Mid F 3. High F 4. Partial extraction 5. Total ext. 6. Version 7. Condu-litatio-corpo-re.	0. No fundal pressure 1. Mild 2. Moderate 3. Heavy	0. No rotation 1. Manual rotation 45° 2. Manual rot -45-90° 3. Manual rotation 4. Manual rotation 90° or more 5. Forceps rotation 45° 6. F rot 45-90° 7. F rot 90° or more	0. No flexion 1. Manual flexion 2. Forceps flexion 3. Both 4. Manual extension 5. Forceps extension 6. Both	0. None of these 1. Mariceau 2. Wigand 3. ACHF 4. Pinard 5. Fx of clavicle 6. Freeing of post-shoulder	0. No de-structive procedure 1. Drainage of CSF 2. Decapitation 3. Craniotomy 4. Other 5. Comb-ination of above	0. None 1. Nuchal arms 2. Failed F 3. Trial F 4. Shoulder dystocia 5. Cord prolapse 6. Inversion of uterus 7. Torsion of uterus 8. Prolapse of uterus 9. Constriction ring
2nd Twin	as a	if a breach	by means of			with these maneuvers			Complications
									hrs. _____ min.

THIRD STAGE

[illegible]

	AGE GROUPS				Total
	Under 20	20-29	30-39	Over 40	
Method of Delivery					
Spontaneous	1	8	6		15
Low F	3	8	2		13
Mid F					
High F					
Partial Extraction					
Total Extraction			1		1
Version and Extraction					
Conducatocorpore					
Total					29
Method of Delivery of Placenta					
Spontaneous		4	3		7
Simple Expression	4	11	6		21
Crede					
Traction					
Brandt Maneuver					
Manual Maneuver		1	1		2
Manual Removal and Any of					
Above					
Other					
Total					30
Manual Invasion of Uterus					
None	2	4	4		10
Placental Removal					
Removal of Placental Fragment					
Exploration for Lacerations		2	1		3
Combinations					
Total					13
Age Distribution of Sample	4	16	11		31

Figure 3

the computer cannot make the diagnosis and code it out. In addition, statistical summaries can be prepared for hospital record rooms and staff meetings on concurrent basis.

The service aspect, while interesting, is not really the exciting thing about the computer. It is the possibility of reviewing thousands, tens of thousands, or even hundreds of thousands of records for chart reviews. In addition to the classic papers on breech, placenta previa, or whatever, correlations undreamed of can be probed. Obscure trends can be spotted early. The volume of cases available for analysis will permit significant statistical analysis of groups and sub-groups. With such large volumes of records and high speed of processing, information of current management of conditions of low incidence such as prolapsed cord, transverse lie, or even triplets will become available. In addition, probes of apparently irrelevant correlations such as body weight and length of labor, admission blood pressure and blood loss, or seasonal variations in certain complications, might give us important diagnostic and prognostic clues

whether we understand the cause and effect relationship or not.

Prospective studies, of course, will be greatly facilitated. The investigator must carefully design his experiment, set precise limits on the variables under investigation and originate a code sheet for their recording. This code sheet can be key punched with the usual clinical record which will be marked as one of a study group. When the study is completed, the program will be run on the selected group of records and the data will be printed out in minutes. The investigator will thus spend his time doing the work instead of shuffling paper (button counting). It may be more germane in the future for a clinical investigator to get a grant for programming than for clerical help.

One of the key aspects is programming. Once done, a particular program can be used over and over. A five year study on breech can be followed by a ten year study, by a twenty year study *ad nauseam*. This will greatly devalue the clinical paper and take the morality out of the chart review.

The computer, as always, will change the social organization of record management. No one institution will have sufficient volume to justify even a moderate size computer, much less afford it. Computer cooperatives will be necessary. Precedent exists for such in the Obstetrical Data Cooperative and Commission of Professional and Hospital Studies. The latter organization has found it useful to sign a contract with participating hospitals and such a mechanism will no doubt be necessary with a computer cooperative.

A hospital need not be large or able to afford expensive equipment to participate in such a program. The code sheet duplicates can be mailed to the processing center or if the institution does have key

IBM 1402 READS 800 CARDS PER MINUTE PRINTER PRINTS 600 LINES PER MINUTE		
Present Study—31 Labor Records		
Program	100 Cards	8 Sec.
Labor Records	400 Cards	30 Sec.
Printout	30 Lines	3 Sec.
Total Time for Analysis		41 Sec.
Possible Study—25,000 Labor Records		
Program	100 Cards	8 Sec.
Labor Records	300,000 Cards	375 Min. 0 Sec.
Printout	30 Lines	3 Sec.
Total Time for Analysis		375 Min. 11 Sec. or 6 Hours 15 Min. 11 Sec.

Figure 4

(Continued on page 551)



Fibroblastic Lesions of Soft Tissue

Edited by CHARLES T. HINSHAW, JR., M.D.*

Dr. Stanley R. Friesen (moderator-surgeon): The subject for discussion this afternoon has to do with tumors of the soft tissues. These are usually mesenchymal tumors.

Dr. Robert Martin (surgery resident): A 46-year-old man entered the hospital with the chief complaint of a mass in his right shoulder of approximately two weeks' duration. He discovered this mass accidentally by rubbing his hand over his shoulder. There was no history of any pain or neurological deficit associated with the mass. There was no history of trauma or injections in this area. The mass had not enlarged from the time he detected it until the time he entered the hospital. He noticed no weakness in his arm. A 3 x 6 cm. hard, smooth, non-tender, non-pulsatile mass was palpable in the anterior lateral aspect of the upper arm. This mass was slightly movable in the lateral direction but was not movable superiorly or inferiorly. It did not appear to be attached to the underlying bone nor to the overlying skin. It was lying between the biceps and the triceps muscles. There was no neurological deficit detected and pulses were good in the right arm.

Dr. Friesen: The history and physical findings were just as straightforward as Dr. Martin has related them. Since the tumor mass would move laterally but not up and down, we thought it was probably in the muscle belly.

Dr. James O. Boley (pathologist): Is it not true that nerve tumors will move laterally, but not up and down?

Dr. Friesen: Yes, that is true.

Dr. Frank A. Mantz (pathologist): There are a number of tumors that do that. I think one of the most unusual ones is the chemodectoma in the neck, the potato tumor. These likewise have the same range of motion.

Dr. Friesen: We could not really identify from which tissue the mass arose, although we thought it came from muscle. It could as well have been a tumor of the nerve. Mr. Hancock, what kind of diagnostic studies were done?

Mr. Alan C. Hancock (medical student): We did serial arteriography of the area. This demonstrated abnormal vascularity, tumor stain, and almost instantaneous filling of the veins during the arterial phase. These are thought to be fairly reliable criteria for malignancy.

Dr. Friesen: We will see these x-rays soon. There were some other diagnostic studies which would interest us. These are studies which are necessary before one can embark upon treatment.

Mr. Hancock: We had a chest x-ray looking for a pulmonary metastasis.

Dr. Friesen: Yes, if it is a malignant tumor we want to know if there are pulmonary metastases. None were visible. Also, an x-ray of the underlying bone failed to demonstrate bony invasion. What was our preoperative diagnosis?

Dr. Martin: Fibrosarcoma.

Dr. Friesen: What was done about this tumor, Dr. Martin?

Dr. Martin: The tumor was widely excised, most of the belly of the coracobrachialis muscle being removed. We did not at any time knowingly enter a field of tumor. The tumor came off the bone easily, indicating that it was not invading into bone. After the tumor was out we then took off another several centimeters of coracobrachialis muscle superiorly from the tumor. He had no other treatment.

Dr. Friesen: He has had wide excision of the tumor, and this is all. May we see a picture of the specimen please, Dr. Mantz?

Dr. Mantz: On the laboratory bench the tumor presented a somewhat characteristic appearance. It involved the substance of the muscle. The external

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surface was covered, for the most part, by visible muscle fibers. In one area fascia and adjacent fat were discernable. On section through the lesion the fascia did not appear to be involved. At first glance the lesion was fairly well circumscribed, but if one looked closely, one could see a few strands of tumor which appeared to extend into adjacent tissue. I would be highly concerned by the fact that one could see tumor at the resection margin, in one area.

Histologically, one could make out strands of pre-existing striated muscle in which the nuclei had been lost, for the most part, and in which striations could not be seen at all. In between these muscle bands, and separating them very widely, was a moderately cellular type of process in which there was a significant degree of edema or possibly of myxoid degeneration. The tumor was composed of fairly uniform cells that ranged from fusiform to spindly. The nuclei, instead of being homogeneous and hyperchromatic or pyknotic, were rather remarkably fascicular, and many of them contained prominent nucleoli, a feature that no self respecting, mature fibroblast would exhibit (*Figure 1*). Thus, the tumor seemed to consist of intermuscle fiber masses that came together as a result of the destruction of the intervening muscle tissue. At the border of this lesion, and to me one of its most disturbing features, the process of proliferative disorder had extended beyond the confines of the muscle and was infiltrating into the adjacent fat.

I am a firm believer that one does not identify soft tissue tumors pathologically until the gamut of special identification procedures is conducted. These would include attempts to demonstrate fat, striations in tumor cells, neural elements, and collagen. As a result of connective tissue stains, we observed, in association with the tumor cells, a deposition of blue fiber-like structures suggestive of collagen. I think we can certainly say that these were processes of fibroblasts in which collagen was being deposited.

In considering the differential diagnosis, I think we can say that this is a tumor of fibroblastic origin. Our problem is to determine whether or not it is benign or malignant, and of what variety.

Basically, there are three main groups of benign fibroblastic neoplasms. Fibroma needs no particular comment. Nodular fibromatosis, however, is of importance since it may very closely simulate the appearance of an invasive fibrosarcoma and certainly causes considerable disability. Nodular fibromatosis is usually exophytic to fascia and tends to extend upward to involve the overlying structures, mostly skin. It is the lesion which is characterized by that disease we refer to as Dupuytren's contracture, or Stout's contracture if it involves the plantar fascia of the foot. It also occurs elsewhere. For example, it is not too uncommon to find a lesion involving the galea aponeurotica

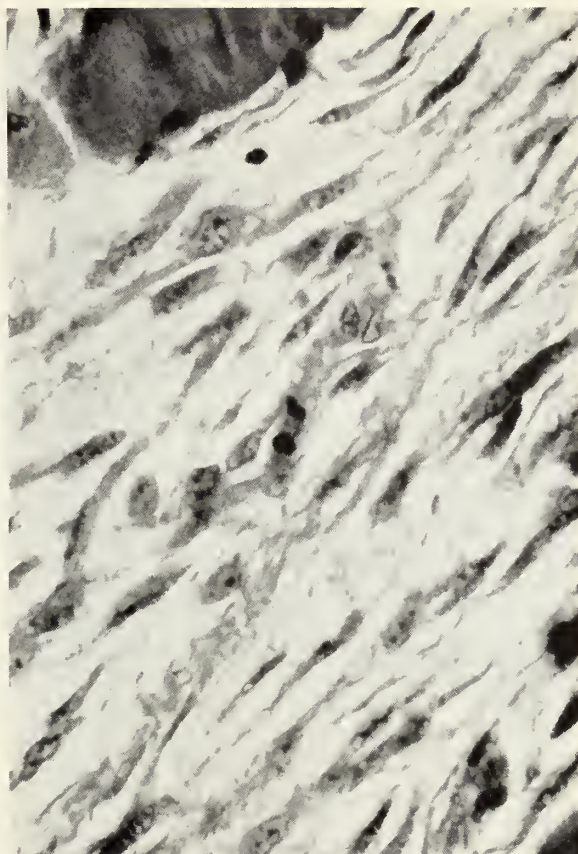


Figure 1. Fusiform and spindly tumor cells of fibrosarcoma. Note prominent nucleoli and mitotic figure. Skeletal muscle is present in left upper corner.

of the scalp. Similar disorders involve Buck's fascia of the penis of certain unfortunate males to create that romantic phenomenon which is sometimes referred to as Peyronie's disease.

Another entirely similar tumor is, of course, the desmoid tumor. This likewise arises from fascia and extends not exophytically, but endophytically into the adjacent underlying muscle. Classically, the desmoid tumor is a lesion which is observed in postpartum women. It constitutes an aggressive lesion which ultimately may, if not properly approached surgically, cause great destruction of muscle and actually bring about death. The desmoid has many features suggesting malignancy, but it does not metastasize. A similar tumor may occur elsewhere in males as well as females and is sometimes referred to as the extra-abdominal desmoid tumor. The desmoid tumor is one of two lesions which I think we must certainly consider in this particular case. Desmoid tumors appear to arise from fascia and to involve the entire substance of the muscle as a somewhat non-discrete mass showing a greater tendency to infiltrate outward into adjacent structures than does the lesion which we have under consideration. This is a lesion which,

more characteristically than not, contains dense areas of collagen, indistinguishable from cicatrix, a feature which is not observed in today's case. But, in addition to that, there are areas of great cellularity, usually marking the advancing border of the lesion.

Finally, we must consider the malignant tumors of fibroblastic origin, three in number. By far the most common is the garden variety fibrosarcoma. I will not say too much about dermatofibrosarcoma protuberans and its "kissing cousin," probably the same lesion, so-called progressive dermatofibroma of Darier, a lesion of skin which tends to be widely destructive, as does the desmoid. At any rate, although these two tumors may metastasize, such is exceedingly rare and usually occurs only after a long period of time. The fibrosarcoma, on the other hand, can involve any soft tissue or may arise de novo in bone. It is a lesion which tends to be fairly well circumscribed, as does this one, and tends to extend throughout the area in a very deceptive fashion so that one may get very close to it and not realize it, thinking that a wide excision has been obtained. Fibrosarcoma more frequently involves the extremities than elsewhere and its frequency in the upper extremity is rather great. Occasionally, it does occur within the face and skull, but this is somewhat unusual.

I would personally favor today's case being a fibrosarcoma on the basis of the facts that it does not arise from the fascia, that it is uniformly cellular, and that it exhibits a somewhat aggressive growth.

Dr. Friesen: Dr. Mantz, did you notice any evidence of blood vessel invasion?

Dr. Mantz: One thing that is rather characteristic of fibrosarcoma is a very high degree of vascularity. The fact that classically the tumor cells approach the walls of blood vessels, being separated from the lumen only by a single layer of endothelium, makes vessel invasion difficult to assess. I was struck by the singular paucity of vascularity in this particular case and certainly saw nothing to suggest vascular invasion. This one thing made me consider, for a while, the possibility of desmoid. I doubt if one sees this in more than 1 per cent of the cases. I have recently reviewed our autopsy material on several cases of fibrosarcoma of bone and although lymph node metastasis was claimed at the time of the original workup, in every instance it appeared to be an extension of tumor around and through lymph nodes from adjacent areas.

Dr. Friesen: It seems likely to me, after looking at these slides with you, that local recurrence is possible.

Dr. Mantz: Yes sir, this is true. This is what I would be concerned about. In the material I had it looked as though the resection margin was very close to the lesion, but I understand that you went back

and removed the tissue much more widely and that no residual tumor was found.

Dr. Friesen: Because we realized that the extension of this tumor is usually along the fascial plane, I excised the muscle belly, including its origin and attachments.

Dr. Mantz: It would be my impression, from the histology, that this would be the procedure of choice in this case. This is not the wildly malignant lesion that I should think would require amputation or a more radical procedure.

Dr. C. Frederick Kittle: It would be well to note that radiotherapy and chemotherapy are of virtually no value in this type of tumor.

Dr. Friesen: I think that is right, although I am not acquainted with the chemotherapeutic studies that have been done. Dr. Youngstrom, is x-radiation of fibrosarcoma of much use?

Dr. Karl A. Youngstrom (radiologist): No, we never recommend it for palliation. The number of x-ray cures, I think, is not very significant.

Dr. Friesen: We have already emphasized the proclivity of these tumors to metastasize by the blood stream. The histologic sections do not illustrate the vascularity nearly as much as do the x-rays. I would like to have the students see the angiographic studies you carried out on this tumor, Dr. Youngstrom.

Dr. Youngstrom: The procedure is relatively simple. A needle is placed in the axillary artery and a suitable contrast material is injected. Serial films are taken, just as we do in cerebral arteriography.

Actually, the tumor mass showed in the preliminary films, with soft tissue technique. These angiograms revealed two feeding vessels entering the tumor, and one vein draining it (*Figures 2 and 3*). This vein was visualized in the early part of the study, approximately two seconds after the hypaque was injected. Rapid blood flow through the tumor mass means there are arteriovenous shunts present. These shunts are characteristic of neoplastic tumors according to the criteria we use. Also, a variation in calibre of the vessels was noted, and this is characteristic of a malignant type of angiographic pattern. The reliability experienced with this method is reasonably good. Some are hitting 90 per cent reliability of malignancy.

I would expect this technique to be surgically helpful to you in approaching a tumor. This furnishes one more criterion as to whether or not a tumor might be malignant.

Dr. Friesen: Fibrosarcomas are aggressive tumors that are best treated by wide local excision. These tumors are quite vascular and usually metastasize by the blood stream, rather than lymphatics. The vascularity of these tumors renders them susceptible to radiographic visualization by arteriography.



Figure 2. Arteriography of fibrosarcoma showing two feeder vessels and underlying tumor mass.



Figure 3. Film taken two seconds after that shown in Figure 2. A single vessel draining the tumor mass is seen.

Obstetrical Data Processing

(Continued from page 547)

punching equipment, the cards can be mailed or carried, or the data itself can be transmitted by telephone wire. Cost estimates are as yet unavailable, but it may be that a computer center will be economically feasible in that costs of routine chart processing will be similar to, or even less than, costs of clerical techniques now employed in most hospital record rooms.

This material presented is by no means a completed data processing system. Other records of a similar nature, including history forms, anaesthesia records, laboratory sheets, etc. must be constructed. Much programming must be done.

This is a rather grandiose structure to erect on the frail foundation of an analysis of only 31 records. But all the data processing techniques are available to us now. Input is the big problem. It is hoped that recasting of clinical records as simultaneous code sheets will solve the problem of input.

Reference

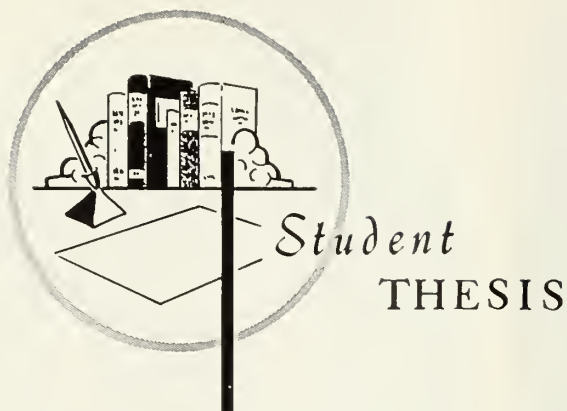
Marchant, Douglas J.: Medical Records, *American Journal of Ob. and Gyn.* 81:190-193 (Jan.), 1961.

FEAR OF CANCER

Fear of cancer, rather than financial difficulties, is one of the major reasons for patient delay in getting medical treatment for suspected or diagnosed cancer. This discovery, based on a survey of 876 hospitalized patients by the California Medical Association and the California Division of the American Cancer Society, was reported by Dr. James C. Doyle, Beverly Hills, at the Rocky Mountain Cancer Conference, Denver. Delays of more than three months in getting medical attention were reported by two of every five patients who admitted being aware of cancer symptoms. Even after diagnosis, one patient in every four was unwilling or unable to carry out the recommended plan of treatment. Two-thirds of the study group conceded that emotional factors blocked their follow-through. —*Modern Medicine*, August 19, 1963.

I sometimes think that God in creating man somewhat overestimated His ability.—*Oscar Wilde*

It is when we all play safe that we create a world of utmost insecurity.—*Dag Hammarskjöld*



A Brief Survey of the Adrenogenital Syndrome

GARY J. MYERS, M.D.,* *Boston*

IN CHILDREN the most common clinical manifestation of adrenal cortical overactivity is that of congenital adrenal hyperplasia (CAH). This syndrome, well known for over a century under such names as dysadrenocorticism, nebenniereninsuffizienz, Pirie's syndrome, syndrome de Debre-Fibiger, and interrenal intoxication, has only been elucidated as a group of enzymatic defects within the adrenal cortex during the last decade. During this period, the investigations of such men as Bongiovanni, Eberlein, Garner, and Cara have done a great deal to clarify the biosynthetic pathways of both the normal adrenal cortex and the pathogenic cortex seen in the various types of CAH, and have elucidated some of the enzymatic defects seen in this disease.

With increasing knowledge of the normal biosynthetic paths, it has become apparent that the same basic pattern of progressive masculinization, except in lipoid hyperplasia, and adrenal cortical hyperplasia can emerge from enzymatic defects at numerous places in these pathways; however, in each instance, other symptoms or signs related to the overproduction, or lack of production, of various adrenal cortical hormones affected by the particular enzymatic defect are apparent. The presence or absence of these secondary manifestations then leads to a variety of

types or subgroups within the broader category of CAH. In order to fully comprehend the biologically available opportunities for enzymatic defects in normal adrenal cortical biosynthetic pathways, the normal sequence of events must first be appreciated.

Normal Adrenal Cortical Biosynthesis

Normal adrenal cortical biosynthesis, as it is germane to the present theme, begins with cholesterol, although acetate has been shown also to be synthesized directly to steroids. Cholesterol, a Δ^5 sterol is converted by an oxidative cleavage between C 20 and C 22 to Δ^5 pregnenolone. This is then dehydrogenated by a 3β -ol dehydrogenase and with consequent shifting of the double bond from the Δ^5 to the Δ^4 position, either by the same enzyme or an isomerase, progesterone is formed. Progesterone then undergoes either direct C 21 hydroxylation resulting in 11 desoxycorticosterone or C 17 α -hydroxylation followed by C 21 hydroxylation leading to 11 desoxycortisol (compound S). 11 desoxycortisol then, by C 11 β -hydroxylation, yields hydrocortisone (also called cortisol or compound F) which is the hormonal feedback control of the pituitary for ACTH production.

If no C 17 α -hydroxylation of progesterone occurs, but only C 21 hydroxylation, the C 11 β -hydroxylation may still follow and the end product is then corticosterone. The precursors of aldosterone are unknown; however, it could arise either directly from corticosterone by direct C 19 aldehyde formation, or by aldehyde formation at C 19 of 11 desoxycorticosterone

* This is one of a group of theses written by fourth year students at the University of Kansas School of Medicine, selected for publication by the Editorial Board from a group judged to be the best by the faculty at the school. Dr. Gary J. Myers is now serving internship at the Children's Hospital Medical Center, Boston, Massachusetts.

and subsequent C 11 β -hydroxylation. It is unlikely that either of these possible routes to aldosterone produces a significant percentage of that normally secreted.

The sequence of events leading to the primary adrenal cortical hormones (hydrocortisone, cortisone, corticosterone, and 11 desoxycorticosterone) appears to be the formation of Δ^4 3 ketones followed by C 17 α -hydroxylation (optional) then C 21 hydroxylation and finally C 11 β -hydroxylation. Other steps such as C 19 aldehyde formation can, in addition, lead to other hormones such as aldosterone. The human adrenal can alter this pattern somewhat, and introduce a C 11 hydroxyl before the introduction of a C 21 hydroxyl, as shown by the isolation of 11 keto-pregnanetriol, a metabolite of 11 β -hydroxyprogesterone, from the urine of some patients with CAH. This indicates that the sequence of events can be altered to some degree by the adrenal cortex.

The cellular sites of hydroxylation appear to vary, with C 11 hydroxylation occurring mainly in the mitochondria, while C 17 and C 21 hydroxylation appear to occur mostly in the microsomes. The position of the hydroxyl and the presence or absence of other functional groups on the steroid nucleus greatly alters function. An 11 keto function decreases electrolyte effects and increases gluconeogenesis and fat metabolizing properties. A 17 α -hydroxyl function also increases gluconeogenesis and fat catabolism. The 19 aldehyde imparts an electrolyte regulating effect. The basic adrenal cortical hormones, thus, all appear to be Δ^4 3 ketones with a ketol side chain, and differ only in the functional components at C 17, C 11, and C 18.

Pathogenesis

The pathogenesis of CAH, while not fully understood, seems to be basically a hormonal imbalance between the adrenal cortex and the pituitary resulting from a failure of the adrenal cortex to produce sufficient hydrocortisone. Hydrocortisone, produced primarily in the zona fasciculata, appears to be the hormonal feedback for regulation of the pituitary's ACTH output. Hydrocortisone is transported in the vascular stream partly bound to a protein, transcortin, and partly unbound. The unbound portion is felt to be the only active fraction. Whether the two fractions are in equilibrium, or whether both influence the pituitary is unknown. The precise trigger mechanism produced by decreased hydrocortisone is unknown; however, an action upon a hypothalamic metabolic process with release of a neurohumor which then travels to the adenohypophysis via the portal system and stimulates basophils to secrete ACTH, seems more plausible in view of present knowledge, than a direct action on the basophils alone.

The precise action of ACTH has not been clearly elucidated; however, in view of the fact that an increase in ACTH produces an increase in both hydrocortisone and corticosterone production, the mechanism of action would appear to be before progesterone in the biosynthetic pathway, perhaps in the conversion of cholesterol to Δ^5 pregnenolone. ACTH has been shown to increase the amounts of adenosine 3, 5 monophosphate in the adrenal cortex. This finding suggests that, perhaps, it activates the phosphorylase system which in turn generates TPNH and, thus, supplies energy for steroid synthesis. Whatever the mechanism may be, ACTH clearly increases the adrenal cortical production of all hormones, with the exception of aldosterone.

Aldosterone production, which appears to be in the zona glomerulosa, is not under ACTH control. Hypophysectomy leads to atrophy of the zona fasciculata and zona reticulata, but not of the zona glomerulosa. The control mechanisms for aldosterone secretion are not known, but two of the most likely hypotheses are direct action of serum sodium changes on the zona glomerulosa and a hormone secreted by the subcommissural organ. Some investigators feel that independent biosynthetic pathways to C 19 and C 21 steroids exist, and that although 11 desoxycorticosterone can be transformed to aldosterone, this is not the most important pathway. Decreased aldosterone production is one explanation for the types of CAH involving sodium loss, but other explanations for this manifestation are just as plausible, and current evidence suggests that the enzymatic defects of CAH do not markedly interfere with aldosterone production.

In the various types of CAH, an enzymatic defect exists at some stage prior to the formation of hydrocortisone, and subsequently blood levels of hydrocortisone are low. This leads to high blood levels of ACTH which stimulates the adrenal cortex to produce greater amounts of those steroids formed prior to the enzymatic defect. The result is hypertrophy of the cortex with accumulation of precursor steroids, and the excretion of large amounts of metabolites of precursor substances. Stimulation with exogenous ACTH in patients with CAH leads to poor or absent synthesis of hydrocortisone. The range of response in hydrocortisone formation probably results from the varying degrees of C 21 hydroxylation block, or from inaccurate tests which measure circulating levels of precursors as well as hydrocortisone. ACTH is normally present in the blood in such small amounts that it cannot be measured; however, it is measurable in patients with CAH.

The circulating blood levels of hydrocortisone, as well as other steroids, are markedly influenced by degeneration. This occurs mostly in the liver where the

tetrahydro derivatives are formed. Saturation to the tetrahydro configuration involves alteration of the ketolic side chain with or without dehydrogenation of the C 11 hydroxyl. The latter is also known to be carried on in some other tissues as well. Following saturation, the metabolites are made water soluble by glucuronidation, excreted in the bile, and then partially reabsorbed and excreted via the kidneys.

Virilization, so typical of classic CAH, is seen in both sexes. It is present in all forms of CAH other than lipoid hyperplasia. In females it is usually manifested as pseudohermaphroditism, while males show macrogenitosomia precox. In both cases, it is progressive unless treatment is instituted and does not regress even with adequate treatment. Embryologically the genital ridge gives rise to two structures, the adrenal cortex and the gonad. It is not surprising, therefore, that the biosynthetic pathways found in both structures should be similar, nor that a remnant of adrenal tissue may frequently be found in the hilus of a gonad. Bongiovanni has even proposed that qualitative differences in adrenal cortical and gonadal hormones may reflect primarily quantitative differences in the tissue enzymes of these organs.

In the newborn and fetus there is a layer of the adrenal cortex called the fetal cortex which constitutes about 85 per cent of its total volume at that time. This fetal zone is similar to the zona reticularis and there is equivocal evidence to suggest that it is a producer of androgens. The only part of the permanent cortex present at birth is a few cell whorls under the capsule, representing the zona glomerulosa. In the second postnatal week, the zona fasciculata begins development, and in the third postnatal month, the adult zona reticularis appears. The fetal cortex has completely involuted by one year of age. The true function of the fetal cortex and its relationship to CAH, if any, is still unknown.

The urinary 17 ketosteroids, a measure of the circulating androgens, are elevated in all forms of CAH, with the exception of lipoid hyperplasia. However, the steroid, or steroids, responsible for the virilization have not been definitely identified. 17 α -hydroxyprogesterone by cleavage of the ketolic side chain and 17 ketonization can form Δ 4 androstene 3,17 dione, which is a precursor for testosterone, androsterone, Δ 4 androstene 11 β -3,17 dione, and estrogen. The 11 oxy 17 ketosteroids, probably derived from Δ 4 androstene 11 β -ol, 3,17 dione, are excreted in relatively large amounts in CAH, and excesses of these could virilize; however, they are absent in CAH with hypertension and virilization. 17 α -hydroxyprogesterone has been experimentally shown to lack virilizing abilities in man, but it too, is present in only small amounts in CAH with hypertension and virilization. Δ 4 androsterone 3,17 dione itself could be the re-

sponsible androgen, and its metabolites are in the urine of all patients with CAH; however, it lacks androgenic activity in man. Testosterone itself has never been shown to be increased in CAH. The main virilizing androgen, thus, remains unknown, and the alternate possibility that virilization is caused by small amounts of multiple androgens appears more likely. In view of the severe masculinization, the excess estrogen secretion normally found in CAH patients seems somewhat paradoxical. It appears that the estrogen derives from Δ 4 androstene 3,17 dione, and that masculinization results from a marked overbalance of the androgen in relation to the estrogen.

The site of production of these virilizing androgens, whatever their configurations may be, appears to be the adrenal cortex. The testicles in males with CAH are characteristically small even where there is gross enlargement of the external genitalia. Microscopically these small testicles lack leydig cells, seminiferous tubules, or spermatozoa. They appear immature and histologically normal for this age group. In females with CAH the ovaries are without evidence of any increased secretory activity and histologically appear normal for their age.

Two other explanations for fetal virilization lie in the fetal gonad, and the maternal androgen level; however, both of these fail to explain either postnatal or progressive virilization. The fetal testis is known to have well developed leydig cells while under the influence of chorionic gonadotropins, and these do secrete androgens, mostly testosterone. This appears to be the basis for the induction of maleness in the fetus. These leydig cells then involute following birth and do not regain function until the hypophysis begins to secrete gonadotropins near puberty.

Types of CAH

In discussing the various types of CAH individually, it seems best to take them in order of appearance of their enzymatic defects as the normal biosynthetic pathway to hydrocortisone is followed. The initial defects seem the most difficult to place in the correct order since the specific enzymatic deficit in lipoid hyperplasia has not been definitely established.

Lipoid Hyperplasia (C 20-C 22 oxidative cleavage defect). Prader and Siebenmann have reviewed the literature on this form of CAH and report five authenticated cases in addition to their case. They suggest that the defect lies in the enzymatic conversion of circulating androgens, are elevated in all forms of CAH, of Δ 5 to Δ 4 steroids, a step that involves C 3 β -hydroxy dehydrogenase for the conversion of Δ 5 pregnenolone to progesterone. However, Bongiovanni reported on three cases of CAH with C 3 β -hydroxy dehydrogenase deficiency, and they differed markedly in their androgen production from reported cases of lip-

oid hyperplasia. This rather indirect evidence would then suggest a defect prior to C 3β -hydroxy dehydrogenation, and the remaining place, other than in the synthesis of cholesterol itself, is in the conversion of cholesterol to 5 pregnenolone. Thus, the defect appears to be of the enzyme, or possibly one of several enzymes, that oxidatively cleaves the C 20-C 22 bond of cholesterol for the formation of Δ^5 pregnenolone.

The striking difference between lipid hyperplasia and the other forms of CAH seems to lie in the development of the external genitalia. Of the six reported cases, three were chromosomal males with testes, but having female external genitalia and raised as females, although one had "clitoral hypertrophy." The three chromosomal females were sexually normal. In the light of the experiments of Jost and studies on gonadal dysgenesis, there are two explanations for the lack of development of maleness. Either the leydig cells of the fetal testis do not produce enough androgen to induce maleness, or the genital area of the embryo fails to react to normal androgen production. The former explanation appears more probable, and may again illustrate the basic similarity between the adrenal cortex and gonad. Overproduction of estrogen would produce a similar clinical picture even if the androgens were normal; however, lack of other symptoms indicating estrogen excess makes this possibility unlikely.

If the enzymatic defect were present in both organs, then the leydig cells would be unable to produce testosterone. It might appear, that precursor steroids to testosterone should then accumulate in the testicle just as they do in the adrenal; however, in the single autopsy of a patient with this disease where this was looked for, it was not found. The child on whom the autopsy was performed was eight months old. Therefore, the possibility exists that precursors accumulated earlier, but were either gradually destroyed or metabolized after the stimulating influence of chorionic gonadotropins was removed. An alternate possibility for the failure to find precursor accumulations, is that the chorionic gonadotropins are of insufficient concentration or potency to stimulate the leydig cells to produce greater amounts of androgens. This latter would appear plausible since there is probably no feedback, similar to that of the adrenal and pituitary, between the gonad and placenta.

Clinically lipid hyperplasia is very similar to classical virilizing CAH with salt loss. The symptoms in both appear a few months after birth and consist of poor development with slow weight gain, general lethargy, vomiting, and increasing fluid intake. Both forms generally lead to a critical episode with dystrophy, shock, and death.

The most consistent clinical findings in lipid hyperplasia appear to be thirst, increasing anorexia with weight loss, and vomiting. In addition there is often lassitude, cough, vomiting, varying fever, and a diffuse Addisonian type pigmentation of the hands, knees, breasts, and gluteal regions. Serum electrolytes present an Addisonian picture with increased potassium, decreased sodium, and mildly decreased chloride. In this particular syndrome, an aldosterone deficiency seems quite possible and could account for this electrolyte picture. The 17 hydroxy urinary steroids are low while 17 keto steroids may be low or normal. Total eosinophil counts are high. Exogenous ACTH produces no significant response, either by raising 17 keto or 17 hydroxy steroids or by lowering the eosinophil count. It is interesting to note that the eosinophil count can fall in these patients with infections or surgery, but this change is apparently on some basis other than ACTH.

Pathologically the adrenals are large, golden in coloration, have destruction of their normal architecture, are packed with lipid, and are increased in weight. In the chromosomal male patients there was a blindly ending vagina with bilateral small ductus deferens, seminal vesicles, and cryptorchid testes. Rudimentary prostates were also seen in two of the males. Genitalia in the chromosomal females were normal.

3β -hydroxy dehydrogenase deficiency. Bongiovanni has reported three cases of this syndrome. The enzyme defect was deduced from the observation that there were no 3 hydroxy saturated C 21 methyl corticosteroids, such as are commonly present in CAH with salt loss, in the urine of these patients. Their urine contained predominantly 3β -hydroxy Δ^5 steroids, which suggests an inability to dehydrogenate the steroid 3β -hydroxy function. All three infants were sodium losers. Sexually, two of the infants were female pseudohermaphrodites, and one was a male with hypospadias. This defect is not well known, but was uniformly fatal in these three cases.

17 hydroxylase deficiency. At the present time no cases of this enzymatic defect have been reported; however, there is no reason to doubt their occurrence.

21 hydroxylation deficiency. This is perhaps the best known of the various adrenogenital enzymatic defects. By varying degrees of 21 hydroxylation deficiency, several subtypes of this form of the disease are produced. They are discussed in order of increasing severity of the enzymatic block. Pathognomonic of all forms of this block is increased urine pregnanetriol with suppression of all its excretion by physiologic doses of hydrocortisone. Neoplasms, also capable of causing cellular enzyme losses, do not respond to this test.

Postnatal Virilization CAH

This form is relatively rare and there is some doubt that it is congenital; however, no better explanation is available. It appears to be due to a very mild degree of C 21 hydroxylation block. The block is apparently so mild that it sometimes does not become manifest until puberty or later, but then progresses very rapidly. The symptoms are generally more severe in younger patients. Adenomas or adenocarcinomas of the adrenal cortex are much more common causes of postnatal virilization in the prepubertal age.

In the prepubertal children, the increased androgens result in exaggerated growth with early epiphyseal maturation and consequent height deficit at the time of epiphyseal closure. Males show pseudosexual precocious puberty with absence of spermatogenesis, but marked maturation of the phallus. Females assume a masculine habitus and have increased hair growth in a male pattern. Constitutional precocity in the male, which presents a similar picture, including some increase in 17 ketosteroids, can be differentiated by the lack of increased urine pregnanetriol.

In the postpubertal age group, especially in females, bilateral adrenal cortical hyperplasia is more common than either adenoma or adrenocarcinoma. Male cases seldom come to the attention of physicians since they manifest only an accentuation of normal male secondary sex characteristics. In females, the symptoms are more noticeable. There is progressive masculinization with increasing sex drive, hypertrichosis in a male pattern, angular baldness, formation of a male escutcheon, development of acne, amenorrhea secondary to anovulation, involution of breast tissue, deepening of the voice, atrophy of the external genitalia with variable enlargement of the clitoris, and an increase in muscle mass. Laboratory examinations in both sexes show primarily an increase in urinary 17 ketosteroids which is suppressed by physiologic doses of cortisone.

Classical Virilizing CAH

This is the classical form of CAH which is primarily an increase in androgens, and leads to progressive virilization after its onset which is usually between the tenth and twentieth weeks of intrauterine life. The defect is a relative deficiency of C 21 hydroxylase. The C 21 compounds can be formed, but only in small quantities, and there is no increase in their production under stressful conditions.

The increased androgens cause pseudohermaphroditism in the female and macrogenitosomia precox in the male. In the female fetus the Mullerian ducts have formed the fallopian tubes, uterus, and vagina by the eleventh or twelfth week; however, the genital ducts and bladder still empty into a common urogenital sinus at that time. The loss of the urogenital sinus and attainment of the final vaginal and bladder re-

lationship does not occur until the fifth month. When androgen production is present, the Mullerian ducts do not develop, but the Wolffian duct system elaborates. If androgens are started at any point after the Mullerian ducts have begun to differentiate, they simply do not differentiate further. Thus, androgen production capable of producing female pseudohermaphrodites must begin between the twelfth and twentieth weeks of gestation. Significantly earlier androgenic effect prevents fusion of the Mullerian ducts and causes persistence of the Wolffian duct with formation of a genital picture similar to that of a normal male. The female pseudohermaphrodites seen with CAH vary in the degree of their genital differentiation, depending upon the stage of differentiation reached before the androgenic stimulation began. The most common variation is a small urogenital sinus indicating androgen stimulation beginning usually about the sixteenth week. Large urogenital sinuses are occasionally found. Sometimes the vagina does not communicate with the sinus or urethra, while at other times, it may open into a penile urethra. The clitoris hypertrophies and may give the appearance of a hypospadiac penis, especially if the labia majora have partly or wholly fused in the manner of a scrotum. The clitoris is usually bound ventrally by fibrous cords, and is subject to constant erections.

The metabolic effects of increased androgens result mainly from increased anabolism. There is early epiphyseal maturation with early fusion, and, if unchecked, achondroplastic skeletal proportions result. The muscle mass increases. Pubic hair begins to grow as early as two to five years of age, followed rapidly by axillary hair development. Acne is present early.

In males, the manifestations are similar; however, they are not so readily appreciated because they are mostly accentuations of the normal male pattern. Virilization may be present at birth, or unnoted until pubic hair develops at an early age. In contrast to such other defects as pituitary tumors, precocious puberty, hypothalamic lesions, or interstitial cell tumor of the testis, which all may cause early virilization, the testes usually do not enlarge or begin spermatogenesis with CAH. In some unusual cases an adrenal rest in the gonadal hilus may hypertrophy and present as a testicular enlargement.

Classical CAH With Salt Loss

There appear to be two types of this disease, both caused by a similar defect, but differing in their time of appearance. The classical form which appears within the first few weeks of life will be discussed first, and the more poorly understood form occurring later in life will be discussed later. The defect in both forms is a relatively severe C 21 hydroxylation block with increased amounts of urinary pregnanetriol, 17 α -hydroxypregnanolone, and 11 ketopregnanetriol, the last often being increased to the greatest degree. All

three of these metabolites are derivatives of 17 α -hydroxyprogesterone, and indicate a lack of C 21 hydroxylation.

The mechanism of salt loss has not been clearly established. The defect could be the result of decreased aldosterone production; however, the manifestations do not respond to aldosterone alone. Hydrocortisone itself has some clinically significant sodium retaining properties, and perhaps its loss is sufficient; however, a similar sodium loss could be expected in other forms of CAH where it is also absent or decreased. The final possibility is some factor increasing urinary sodium excretion. This could be either an inert material which inhibits aldosterone competitively, or an active sodium losing hormone either acting competitively or independently. The fact that newborn infants and many patients with CAH cannot increase aldosterone production, would allow any competitive or noncompetitive sodium losing substance to work. The increased sodium loss with ACTH stimulation and the higher than physiologic doses of 11 desoxycorticosterone needed by these patients to retain adequate sodium both indicate an active sodium losing hormone. It is possible that hydrocortisone itself is needed to augment aldosterone's action; however, again the salt loss could be expected in other forms of CAH if this were true.

The symptoms usually occur in the first week of life, and only rarely begin later than the seventh week. Early signs of this disease are regurgitation or vomiting, apathy, hypotonicity, loss of weight, dehydration, and diarrhea. Later there may be increased pigmentation of the genitalia and areolae. About 65 per cent of these patients have crises consisting of circulatory collapse with pallor, cyanosis, rapid irregular pulse, sweating, unconsciousness, and occasionally convulsions. These crises may occur without apparent cause, or may be secondary to infections. They often become overtly manifest over a period of several days. Rarely, sudden crises may occur without prior symptoms. They may die while in a crisis. Sudden, inexplicable death is frequent in this disease. Perhaps these deaths are sometimes due to cardiac arrest secondary to hyperkalemia. The laboratory findings are consistent with an Addisonian picture of hyponatremia and hyperkalemia.

Cara and Gardner reported on a case of virilizing CAH with sodium loss first appearing at 14 months of age. The case differed from the usual picture only in the age of onset. Bongiovanni and Eberlein reported three cases of what they termed potential sodium losers. That is, they had only slightly decreased serum sodiums and mildly elevated serum potassiums, but manifested no dehydration or other signs of sodium loss. One of their patients returned several months later in an active sodium losing crisis. This may represent a borderline block with sufficient hydrocortisone produced for normal activity, but an in-

sufficient amount for times of stress. Possibly the fetal cortex, which has completely disappeared by twelve months of age, helped to maintain a relative homeostasis up to that time, or possibly the defect is an acquired one.

Classical CAH With Relapsing Fever

The occurrence in patients with classical virilizing CAH of periodic bouts of fever was first reported by Gonzales and Gardner, and attributed to increased levels of histamine. Cara and Gardner later suggested the presently accepted pathogenesis of the fever. The block appears to be in C 21 hydroxylation with the usual finding of classical virilizing CAH; however, the block is more severe, and one of the steroids produced in excess, secondary to the block, is etiocholanolone. Etiocholanolone is the 5 β -stereoisomer of androsterone which has the 5 α -configuration. Both can be formed by conversion of 17 α -hydroxyprogesterone to Δ^4 androstene 3,17 dione, and then saturation of the Δ^4 double bond and of the C 3 ketone group. An isomerase for the conversion of androsterone to etiocholanolone has not been demonstrated; however, if present, an equilibrium between them might be expected. The periodic nature of excess etiocholanolone has not been satisfactorily explained.

That etiocholanolone might be responsible for periodic fever was suggested by Bondy, *et al.* They reported on two patients who did not have CAH, but in whom free etiocholanolone was demonstrated in the blood when fever was present, but was not measurable in their blood between fever episodes. These patients manifested malaise, nausea, vomiting, anorexia, and myalgia similar to that seen in this form of CAH. In one of their patients, etiocholanolone was the only 17 hydroxylated steroid present in the urine during the episodes of fever. Normal adults may have large amounts of etiocholanolone in their urine, but rarely is it the only 17 ketosteroid being excreted. Intramuscular injections of etiocholanolone have also been shown, by Kappas, *et al.*, to produce a similar picture.

During the fever, which may reach 103° F. and last up to seven days, the patients show postural hypotension, occasional vomiting, flushing of the head and neck, abdominal or head pains, and coolness of the extremities. The episodes are often precipitated by some stress such as infection or operation. In this and other respects, they resemble the dysautonomia which is seen in hypothalamic disturbances.

Classical CAH With Hypoglycemia

In 1951 White and Sutton reported on a case of classical CAH with associated episodes of hypoglycemia. On the basis of several studies, they concluded that the deficit was a C 21 hydroxylation deficiency

with consequent production of only small amounts of 11 desoxycortisol which is important in regulating gluconeogenesis and also has an inversely proportional relationship to circulating eosinophiles.

In these patients, the 24-hour urinary corticosteroid excretion is decreased, but the response to epinephrine by hepatic glycogen is unimpaired and they tolerate oral glucose in moderately large quantities without hypoglycemia. Insulin tolerance tests show a normal sustaining effect of hepatic glycogen stores, followed by a rapid drop in blood sugar, and a slow recovery of it to normal levels. This indicates impaired ability to synthesize glucose *de novo* from amino acids, a process in which 11 desoxycortisol is important. ACTH infusions in normal people cause a fall of the circulating eosinophiles to zero; however, in these patients, there is an initial fall which never reaches zero, and subsequent stabilization of the eosinophile count at some figure below the initial level. This indicates a rapid exhaustion of available 11 desoxycortisol, and limited ability to produce further quantities of it.

The normal blood sugar values on most occasions, the normal hepatic glycogenolysis with epinephrine and ACTH, and the only moderately decreased 24-hour urinary corticosteroids, all indicate the 11 desoxycortisol production was adequate for normal needs. However, the hypoglycemic episodes, insulin hypersensitivity, and abnormal eosinophil response indicate an inability to produce adequate amounts of 11 desoxycortisol for stressful situations.

11 β -hydroxylase deficiency (CAH with hypertension). The hypertension associated with this form of virilizing CAH may be either sustained or episodic. The enzymatic block appears to be a complete absence of the enzyme which 11 β -hydroxylates the steroid nucleus. This step is important in both the conversion of 11 desoxycortisol to hydrocortisone and of 11 desoxycorticosterone to corticosterone. The latter precursor, 11 desoxycorticosterone, has been shown experimentally to produce increased blood pressure, while the former precursor, 11 desoxycortisol, does not. Excess aldosterone, cortisone, and hydrocortisone all produce increases in blood pressure, but the latter two are completely blocked in this disease, and the former is at least partially blocked. A similar 11 hydroxylation deficit can be produced by pharmacologic agents, and gives reasonable correlation with the clinical finding of these patients. The increased blood pressure, thus, appears due to an increase in 11 desoxycorticosterone. This steroid exerts part of its effect on the distal tubules of the kidney, where it increases sodium reabsorption. This suggests that part of the mechanism might be due to chronic mild sodium retention in spite of normal serum electrolytes. Chronic elevated sodium intake is known to increase the incidence of hypertension or to aggravate it if

already present. Therefore, at least theoretically, chronic sodium retention of only a mildly abnormal degree could produce similar results.

The increased concentrations of desoxycorticosterone, although causing significant symptoms, are not as high as those of 11 desoxycortisol. Normally neither 11 desoxycortisol or its tetrahydro form are found in measurable quantities in the blood; however, with CAH and hypertension, both are measurable, and the tetrahydro S form is mainly bound to the protein transport systems. The urinary excretion of pregnanetriol, both 3 α , 17 α , 20 β and the 3 α , 20 β , 21 triols, is increased with increased quantities of 17 α -hydroxyprogesterone and 11 desoxycorticosterone, but it normally does not attain the high levels seen in C 21 hydroxylation enzyme deficiencies. The urine in all cases appears to be devoid of 11 oxygenated steroids which are normally slightly increased in the C 21 block type of CAH.

Etiology

Present evidence indicates that the basic defect in this group of diseases is a genetic one. In a study by Childs, *et al.*, they were able to show that their series of 76 cases of CAH among 181 siblings in 54 families fit the criteria for a single autosomal recessive gene deficit to a significant degree. Their cases included several types of CAH. If the concept of a single gene being responsible for a single enzyme is accepted, then it is obvious that several genes must be involved to produce the variety of defects seen within the general classification of CAH. The observation that in families having more than one child affected, the type of CAH is always the same, would tend to support this multiple gene concept. The presence of the same type of CAH in identical twins, authenticated on two occasions, also supports this basic concept.

In the Maryland study, the heterozygote carrier rate for CAH producing genes was calculated to be one in every 128 people. Other studies have indicated a higher frequency. ACTH stimulations done on suspected heterozygotes with measurement of their urinary pregnanetriol has given equivocal results, but they seem to indicate that heterozygote carriers of CAH causing genes are unable to increase their steroid secretion under stress as readily as control subjects under similar ACTH stimulation. The low incidence of this disease in Negroes may be simply a racial characteristic, or may have a more profound significance that is not now understood.

The presence of, at least, five different forms of C 21 hydroxylation blockade may indicate several things. It is possible that more than one C 21 hydroxylating enzyme exists, or perhaps several apoenzymes,

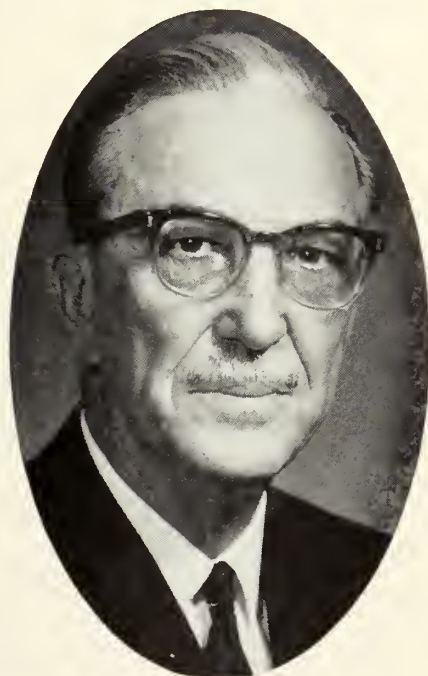
(Continued on page 561)

The President's Message

DEAR DOCTOR:

After several years of study the Kansas Voluntary Council on Standards for Hospitals has granted certificates to five hospitals which have complied with their rules and regulations for accreditation for hospitals with less than 25 beds. The Council is composed of members of the Kansas Hospital Association and the Kansas Medical Society.

The certificates were presented at the annual meeting of the Kansas Hospital Association in November to the Lincoln County Hospital, Lincoln; Morton County Hospital, Elkhart; Osborne Memorial Hospital, Osborne; Phillips County Community Hospital, Phillipsburg; and Plainville Rural Hospital, Plainville. Several other hospitals may qualify in a short time.



Sincerely,

H. St. Clair O'Donnell M.D.

President



Health Care of the Aged

On October 22, 1963, the Subcommittee on Health of the Elderly of the Senate transmitted a report of more than 100 pages about the operation of the Kerr-Mills program. This is a highly critical document designed to demonstrate that Kerr-Mills will not succeed in solving the financial problems related to health care of the aged.

Three members of this subcommittee, Senators Everett Dirksen of Illinois, Barry Goldwater of Arizona and Frank Carlson of Kansas, prepared a minority report which was published in the *Congressional Record* of Tuesday, October 29, 1963. A few excerpts from this minority report are published below.

Improvement in methods of financing medical care costs for persons past 65 has been rapid and substantial during the past several years.

This improvement, which has been both quantitative and qualitative, has resulted in part from a continuation of higher income among older people, in part from volatile expansion and refinement of voluntary health insurance, in part from development of public programs encouraged by Federal grants-in-aid to the States and in part from continued growth of State and local aid programs which do not employ Federal funds.

It is almost inconceivable that an effort be made to evaluate any one of these major elements relating to medical care of older people without clear and careful reference to accomplishments by the others. Yet this is precisely what has been attempted in the majority report.

The Kerr-Mills Act medical assistance to the aged program, with which the report is concerned, has

never expected "by itself" to provide the sole avenue for financing medical care for the Nation's 18 million persons past 65.

... While there is agreement that some older people need and should have services related to medical care provided in part or totality through Federal and State funds, an attempt to appraise such programs without reference to private plans inevitably will be deficient.

That voluntary health insurance, supplemented by public programs where needed, is the Nation's method of choice for financing major medical costs is indicated by congressional mail and the results of polls conducted by Members of Congress.

Of 33 recent polls of the constituents by Members of Congress (23 Republicans and 10 Democrats), 31 produced majority views against a Federal social security system program.

... Certainly any compulsory program, unrelated to need, would permanently freeze the Federal Government's role in medical care for individuals. It would involve serious dangers for the existing medical care system now based on maximum exercise of private initiative and individual responsibility.

One of the major programs to prevent hardship cases referred to therein, of course, is the medical assistance for the aged (MAA) program created by the Kerr-Mills Act.

Every effort should be made at both Federal and State level to make the MAA program work. Possibly amendments to the act will be required to clarify and completely implement congressional intent.

Whether one approves or disapproves of the approach envisioned by the Kerr-Mills Act, it is the law of the land. As such, its implementation should receive the full support of Federal officials. The negative tone of the majority statement depreciates this concept and

thus tends, in itself, to help create a climate in which many older people may be denied the services intended.

It may be expected that the program will work if given full support.

To conclude, as the majority opinion has, that MAA is not working, will not work, and cannot work is to form a premature judgment based on inadequate evidence.

. . . The most serious implication in this majority quotation, however, is that "low usage" automatically means "inadequacy." This is based on the highly questionable assumption that there is a vast unmet need for medical care among older people. It is equally and perhaps much more plausible that this "low usage" may be due to the adequacy of other existing mechanisms. In fact, it suggests that coverage by other programs may be exceedingly good.

. . . Another quote from the majority statement says: "Except for those four States having comprehensive programs (Hawaii, Massachusetts, New York, and North Dakota) benefits are nominal, nonexistent, or inadequate."

Whether a program is "comprehensive," "intermediate," or "minimal" is based on definitions developed by the Bureau of Family Services of the Department of Health, Education and Welfare with regard to the type of services provided. According to these definitions, which are set forth in the majority report, the administration social security financed proposal would qualify as a "minimal" program, unless one regards services by interns and residents in teaching hospitals and services by anesthesiologists, pathologists, radiologists, and physiatrists in the hospital as fulfilling the qualification regarding "physician services."

The significant fact is, however, that there is no real evidence for jumping to the conclusion that even "minimal" standards according to these definitions can be equated with inadequacy. The type of benefits cannot be isolated from other medical programs in the State. . . .

In conclusion, it would seem that the majority opinion that—"The evidence available after three years of Kerr-Mills operation demonstrates conclusively that the congressional intent has not and will not be realized"—will not stand up under even the most casual review.

The fact that much of the data used in the majority statement is based on a period when many States were getting started and some were engaged in perfecting plans authorized, but yet to be inaugurated, underscores the inconclusiveness of the evidence presented therein.

It bears repeating, further, that the preferred method of most Americans for meeting the major costs of medical care is voluntary health insurance. This is true of both young and old. This preference should be encouraged.

Because availability of adequate income wherever possible constitutes the best way to express such encouragement, the highest priority in Federal Government policies relating to older people should be those aimed at improving income and at preserving the

dollar's value so such improvements will have maximum beneficial effect.

EVERETT MCKINLEY DIRKSEN
BARRY GOLDWATER
FRANK CARLSON

Student Thesis

(Continued from page 558)

each controlled by its own gene, are necessary for the reaction. Under the recent theory of controller genes, it is possible that genetic alterations in them might significantly alter the rate of reactions, thus making the enzymes useless, even if present and in adequate amounts.

Summary

A general discussion of those characteristics of the adrenogenital syndrome which are held in common by most of the types of this syndrome has been presented with particular emphasis on the normal biosynthetic pathways and on the pathogenetic mechanisms of virilization and adrenal cortical hyperplasia. Next, the various types of the disease were discussed with emphasis on the enzymatic block believed to be responsible and the symptoms presented by the patients. Finally, the present knowledge concerning the etiology of CAH in general was presented. The adrenogenital syndrome appears to be a group of enzymatic defects which are closely related because they all affect the adrenal cortical hormones synthesis, and due to a lack of significant collateral biosynthetic pathways, they all affect to some degree the production of the basic controlling hormone for adrenal synthesis, namely hydrocortisone, and to a lesser degree cortisone. The disease appears to be a genetically transmitted autosomal recessive with different genes involved in different types of the disease.

EDITOR'S NOTE: References may be obtained by writing the JOURNAL, 315 West 4th Street, Topeka, Kansas 66603.

NEW MEMBERS

The JOURNAL takes this opportunity to welcome these new members into the Kansas Medical Society.

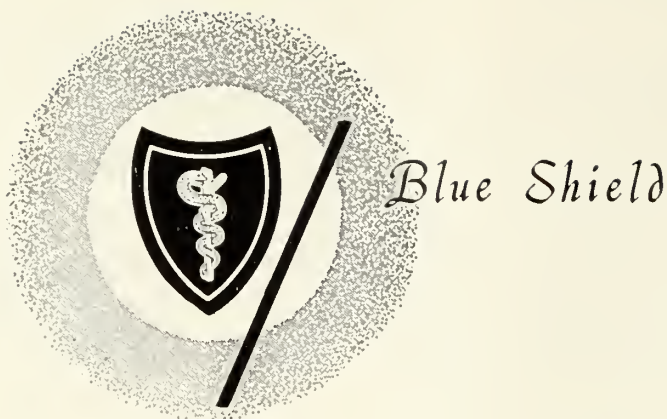
John J. Johnson, M.D.
722 First National Bank
Bldg.
Wichita, Kansas 67202

James E. Morgan, M.D.
1115 Topeka Boulevard
Topeka, Kansas 66612

Edward R. Lee, M.D.
2002 E. 17th Street
Wichita, Kansas 67214

Donald A. Neher, M.D.
The Menninger Foundation
Topeka, Kansas 66606

Robert C. Tinker, M.D.
425 N. Hillside
Wichita, Kansas 67214



Blue Shield Rates to Increase in 1964

Blue Shield 1964 subscription charges will increase for regular group, Farm Bureau and non-group categories. Rate increases will apply to basic Blue Shield Schedules 1, 2 and 3 as well as to X-Ray Riders and Out-Patient Lab Rider.

The principal reason behind the need for higher rates is the marked rise in use of benefits which appears to be a present trend among Blue Shield subscribers in Kansas. During the past 15 months the average family enrolled in Blue Shield incurred over 5 per cent more in eligible case expense than in the past. Moreover, conservative estimates indicate that a 3½ per cent increase in use above this level may be expected in the year to come. This would mean that, by year's end in 1964, more than 8½ per cent would have been added to total Blue Shield case expense as compared to the 1962 use picture.

Although a relatively stable operating expense will be maintained throughout this period, the necessity of securing additional income to offset the rising Blue Shield liability created by greater use still remains. It was upon this basis coupled with the need to protect present levels of reserve funds, that the present raise in subscription charges was determined. It was felt that the alternative—to maintain present rates by reduction of benefits—was contrary to the expectations of the majority of both subscribers and the medical profession.

A minor portion of the rate increase will support fee schedule adjustments becoming effective in Jan-

uary. These adjusted allowances reflect the work of the Special Blue Shield Surgical Committee which recently completed a project aimed at correcting inequities in present surgery fees. Although such corrections do account for a few cents on 1964 rates, these revisions represent only a small percentage of the overall differential.

The most pronounced rise in subscribers' use of benefits is illustrated by the 1964 rates for X-Ray and Out-Patient Lab Riders. Whereas rate increases to sustain present Schedules 1, 2 and 3 benefits are generally 10 to 12 per cent of 1963 dues, next year's rates for X-Ray and Lab Riders will range 15 to 33 per cent above present monthly costs.

The following chart compares present monthly subscription charges for family memberships with those for the coming year. (Single membership subscription charges are one-half the amounts shown in the chart.)

Not all Blue Shield groups will receive rate increases for 1964. While regular groups' subscription charges will rise as indicated above, merit rated groups may have no increases or may even receive decreases in monthly dues if their 1963 experience has been favorable. Other categories of Blue Shield membership including most student groups, Senior Citizen Plan members, and certain National Account groups will not be affected by rate changes.

Blue Cross rates for the same categories of mem-

Type of Contract	Regular Group		Farm Bureau		Non-Group	
	1963	1964	1963	1964	1963	1964
—Schedule 1	\$3.80	\$4.20	\$4.10	\$4.60	\$4.20	\$4.70
—Schedule 2	5.30	5.90	5.70	6.40	5.80	6.50
—Schedule 3	5.90	6.60	6.40	7.20	6.50	7.30
—X-Ray Rider with Schedule 1 & 2	1.20	1.40	1.30	1.40	Not Available	Not Available
—X-Ray Rider with Schedule 3	1.20	1.50	1.30	1.50	1.30	1.50
			Not		Not	Not
—Lab Rider	0.30	0.40	Available	.40	Available	Available

bership will also increase in 1964. Raises will be generally similar to Blue Shield in proportion to present subscription charges. The increase in Blue Cross

costs is due to the continuing upward trend in hospital costs as hospitals expand the scope and quality of their services.

HEPATITIS SURVEY

Strict bed rest is apparently not essential in the treatment of infectious hepatitis. While forced intake of a high-protein diet (at least 3,000 calories, 150 gm. protein daily) shortens the period of acute illness by about 20 per cent, it has no demonstrable effect on the long-term health of patients.

These are principal findings from a ten-year follow-up study of the effects of diet and rest in treatment of infectious hepatitis as reported by M. Dean Nefzger, Ph.D., of Washington, D. C., and Dr. Thomas C. Chalmers of Boston, Massachusetts.

In the decade after World War II, strict bed rest became firmly entrenched "as the only effective method of therapy for acute infectious hepatitis." Application of this principle resulted in prolonging hospitalization and disability time considerably when compared with the more casual treatment in effect before the war.

"In carefully designed and controlled studies conducted among members of the Armed Forces in Japan, it was found that patients treated with *ad libitum* bed rest [freedom of wards; one-hour rest period required after each meal] improved just as rapidly as those kept at strict bed rest and that patients who were returned to active physical rehabilitation as soon as the results of their liver function tests were relatively normal had as uncomplicated a convalescence as those sent back to duty much more gradually," the authors explained.

Reluctance on the part of physicians to accept the validity of this result is attributed "principally to the lack of long-term follow-up information on possible disabilities caused by early ambulation." The 460 men enrolled in the 1951 trials therefore were followed to June 30, 1961. Similar data were obtained for 496 enlisted men who served in Korea during the study period but who were not hospitalized at any time.

"The difference in mortality rates, cause of death, hospital admission rates, hospital diagnoses and Veterans Administration disability ratings were not statistically significant. . . ." Records of 96 patients with follow-up diagnoses of relevance to hepatitis were reviewed in detail.

"None contained evidence of serious chronic liver disease, ten contained convincing clinical evidence of minimal liver disease and fourteen contained suggestive evidence of residual effects. There is some evidence that infectious hepatitis occasionally may last about two years, but eventually clears up completely."

"When all hepatitis patients were compared with the group of nonhospitalized men, the mortality rates were found to be almost identical," they added.

NEFZGER, M. D., and CHALMERS, T. C.
The treatment of acute infectious hepatitis,
Am. J. Medicine 35:299 (September) 1963.



Personalities—IN KANSAS MEDICINE

Sixty members of the Kansas Chapter of the American College of Surgeons met at the Halstead Hospital, Halstead, in October. **Cyril Black**, Pratt, conducted the all day professional meeting as president. **William P. Williamson**, Kansas City, presented his experiences aboard the *S. S. Hope* during a two months' tour of service in Peru. **Robert G. Rate**, Halstead, was elected president of the Kansas group for 1964.

Floyd C. Beelman, Topeka, acting director of the Topeka-Shawnee County Health Department, was the speaker at the October meeting of the Shawnee County Organization of Licensed Nursing and Care Homes.

Howard E. Snyder, Winfield, participated in the program of the Governor's Safety Conference held in Topeka in October. Dr. Snyder talked on the Kansas Medical Society's safety program.

Charles M. Poser, Kansas City, has resigned as director of the training program in neurology for the University of Kansas Medical Center to accept the position as chief neurologist of a planned neurological service division at General Hospital and Medical Center, Inc., Kansas City, Missouri.

The Jackson County (Missouri) Medical Society honored **Charles C. Dennie**, Kansas City, on his 80th birthday in October. Dr. Dennie was awarded the society's merit citation with gold key for his achievements in 51 years of medical practice.

A research project into acute and chronic leukemia will be continued at Wesley Medical Research Foundation, Wichita, with an additional \$10,100 grant

from the Kansas Division of the American Cancer Society. Recipients are **Leo P. Cawley** and **Tom Hiratzka**, principal researchers in the project.

Robert D. Parman, Topeka, has been elected a fellow of the American Academy of Pediatrics.

New officers of the Kansas Chapter, American Academy of General Practice were elected at their annual meeting in October. **G. W. Fields**, Scott City, was named president-elect. Other new officers are: **John Blank**, Hutchinson, vice president; **Samuel Zweifel**, Kingman, secretary; **Jack Phipps**, Wichita, Board of Directors; **C. W. Miller**, Wichita, delegate; **F. E. Dillenbeck** and **N. H. Overholser**, both of El Dorado, alternate delegates. **Floyd C. Beelman**, Topeka, who was president-elect, will serve as president during the coming year.

A free diagnostic clinic for crippled children of Seward County and the surrounding area was held at Liberal in October. The clinic was conducted by **Cline D. Hensley, Jr.** and **H. O. Marsh**, of Wichita, and **John F. Thurlow** of Hays.

Dean Collins and **Donald Rinsley**, of Topeka, presented papers at the fall meeting of the Kansas district branch of the American Psychiatric Association recently held at the Topeka State Hospital.

Irvin H. Mattick, Hays, **John D. Foret**, Kansas City, **Ira R. Grimes**, Liberal, and **Albert A. Armbruster**, Shawnee Mission, were among those inducted as fellows of the American College of Surgeons in November. The ceremony was held during the organization's clinical congress in San Francisco.

Your Comments, Please

There has been immense interest in recent years among physicians and laymen concerning the rendering of aid at the scene of an emergency by licensed medical personnel. Some physicians refuse to stop and administer aid for various reasons and this has often led to criticism by the laity.

A study is being made on emergency care and Good Samaritan legislation protecting doctors from liability. As a Kansas physician, it would be helpful to obtain your attitudes on this matter.

Please complete and return this questionnaire to the office of the JOURNAL, 315 West 4th Street, Topeka, Kansas 66603.

Please answer yes or no and feel free to comment on any question.

1. Would you stop to provide medical assistance if you see an accident or emergency while traveling in your car
 - a. In your own county
 - b. In the state of Kansas
 - c. In any other state of the U. S.?
2. If there are any special circumstances under which you would stop or not be willing to stop, please specify, i.e. large crowd, no other persons around, on vacation, etc.
.....
3. Would you volunteer aid at an athletic event in the case of illness or injury?
4. Do you think physicians should be protected by specific law against liability arising from emergency treatment?
5. Are you equipped for emergency treatment at roadside?
6. If Good Samaritan laws protecting physicians existed in every state in the U. S. would you be willing to
 - a. Aid at an emergency
 - b. Carry emergency equipment in your automobile?

Are you engaged in general practice or a specialty?

If a specialty, please designate

In what county of Kansas do you reside?



Along The BOOKSHELF

Clendening Medical Library

RECENT ACQUISITIONS

- Abuladze, K. S. The functioning of paired organs. Macmillan, 1963.
- Alpers, B. J. Clinical neurology. 5th ed. Davis, 1963.
- American Medical Association. The business side of medical practice. A.M.A., 1963.
- Belcher, J. R. and Sturridge, M. F. Thoracic surgical management. 3d ed. Williams & Wilkins, 1962.
- Bellet, Samuel. Clinical disorders of the heart beat. 2d ed. Lea & Febiger, 1963.
- Bergmeyer, H. U., ed. Methods of enzymatic analysis. Academic, 1963.
- Bowes, A. D. P. and Church, C. F. Food values of portions commonly used. 9th ed. Lippincott, 1963.
- Breckenridge, M. E. and Murphy, M. N. Growth and development of the young child. 7th ed. Saunders, 1963.
- Brock, Samuel and Krieger, H. P. The basis of clinical neurology. 4th ed. Williams & Wilkins, 1963.
- Feldberg, Wilhelm. A pharmacological approach to the brain. . . Williams & Wilkins, 1963.
- Gell, P. G. H. and Coombs, R. R. A., eds. Clinical aspects of immunology. Davis, 1962.
- Grinder, R. E., ed. Studies in adolescence. Macmillan, 1963.
- Guyton, A. C. Circulatory physiology: Cardiac output and its regulation. Saunders, 1963.
- Hall, J. E. Applied gynecologic pathology. Appleton-Century-Crofts, 1963.
- Harris, R. J. C., ed. Cell growth and cell division. Academic, 1963.
- Harris, R. J. C., ed. Cellular basis and etiology of late somatic effects of ionizing radiation. Academic, 1963.
- Haurowitz, Felix. The chemistry and function of proteins. 2d ed. Academic, 1963.
- Kerdel-Vegas, Francisco. Rhinoscleroma. Thomas, 1963.
- Kestenbaum, Alfred. Applied anatomy of the eye. Grune & Stratton, 1963.
- Kinmoth, J. B. and others. Vascular surgery. Arnold, 1962.
- McIlwain, Henry. Chemical exploration of the brain. Elsevier, 1963.
- Marks, P. A. and Seeman, William. Actuarial description of abnormal personality; an atlas for use with the MMPI. Williams & Wilkins, 1963.
- Matthews, D. N., ed. Recent advances in the surgery of trauma. Little, Brown, 1963.
- Miller, Harold and Durant, J. A. Adrenocortical disorders. Pitman, 1962.
- Milstein, B. B. Cardiac arrest and resuscitation. Lloyd-Luke, 1963.
- Neustedt, D. H. Chemistry and therapy of collagen diseases. Thomas, 1963.
- Norman, A. P., ed. Congenital abnormalities in infancy. Blackwell, 1963.
- Olson, J. L. A comparison of sensory aphasic, expressive aphasic, and deaf children. University Microfilms, 1963.
- Osborn, G. R. The incubation period of coronary thrombosis. Butterworths, 1963.
- Peet, E. W. and Patterson, T. J. S. The essentials of plastic surgery. Blackwell, 1963.
- Rasch, P. J. and Burke, R. K. Kinesiology and applied anatomy. 2d ed. Lea & Febiger, 1963.
- Revell, D. T. Dietary control of hypercholesteremia. Thomas, 1962.
- Rewell, R. E. Pathology of the upper respiratory tract. Livingstone, 1963.
- Schneck, J. M., ed. Hypnosis in modern medicine. 3d ed. Thomas, 1963.
- Schneewind, J. H., ed. Emergency service manual. Year Book, 1963.
- Shands, A. R. and others. Handbook of orthopaedic surgery. 6th ed. Mosby, 1963.
- Shields, J. R. S. Handbook of the practice of anesthesia. Mosby, 1963.
- Stamey, T. A. Renovascular hypertension. Williams & Wilkins, 1963.



Book REVIEWS

Todd-Sanford CLINICAL DIAGNOSIS BY LABORATORY METHODS. Edited by Israel Davidsohn, M.D., and Benjamin B. Wells, M.D., Ph.D. Edition XIII, W. B. Saunders Company, Philadelphia, 1962. 1020 pages illustrated. \$16.50.

It is next to impossible to be objectively critical of old friends, and "Todd and Sanford" must surely be an old friend of nearly every physician now in practice in the United States because the first edition, written by the father of the specialty of clinical pathology, Dr. James C. Todd, was published in 1908. Its popularity must have been immediate because edition followed edition in rapid succession. Its reviews were consistently favorable, and the history of the book, as pointed out in an interesting historical introduction by Dr. Davidsohn, has closely paralleled the history of clinical pathology. The first edition contained 319 pages measuring 5 x 7½ inches, and has increased to the present size of 1,049 double column pages of 7 x 10 inches.

Dr. Arthur H. Sanford joined as junior author of the fifth edition that appeared in 1927, a year before Dr. Todd's death, and was therefore on the title page of textbooks used by most of us who are in practice today! He continued to guide the book through eight editions, the twelfth and last under his stewardship appearing in 1953. The nine years between it and the current edition represent the longest lapse in time between editions and very likely, reflect the problem that the author had in writing and editing in his declining years—he died in 1959 at the age of 77—and the subsequent difficulties in securing a suitable successor or successors.

This edition is, for the first time, a work of multiple authorship. The two editors have been joined by sixteen contributors in giving us an up-to-date book. We can deplore the loss of individuality and character in such collaborative works, but the explosive expansion of knowledge in all fields of medicine make such authorship virtually a necessity in books of general scope. Even so, it is impossible to encompass all

of laboratory medicine in a single volume. The editors have, therefore, been selective, giving more emphasis to topics of the greatest practical importance. The traditional topics are well covered, and new material in this edition includes: water and electrolytes, liver function tests, pancreatic function tests, serum enzyme determinations, isotopes in laboratory diagnosis as well as a section on statistical methods in clinical pathology and one on hospital epidemiology.

The book is well printed on good quality paper, profusely and appropriately illustrated with charts, graphs, black-and-white, and (a few) color plates. Only the color plates can be criticized. With the present availability of excellent reproduction of color photomicrographs there can really be no good excuse for using unrealistic and misleading color drawings of blood cells, malarial parasites, etc. Four appendices increase the utility of the book and include (1) the clinical pathologic laboratory; (2) culture media, stains, reagents, and technics; (3) physiologic solutions, buffers, acid-base indicators, and weights and measures with equivalents; and (4) tables of normal values. The index is entirely adequate.

"Todd and Sanford" has always been a book for physicians, students and "med techs" rather than for clinical pathologists. It has for over fifty years fulfilled this destiny, and the present book can be recommended to the same group. Practicing physicians will probably find that it is especially helpful as an aid to interpreting current literature and hospital laboratory reports. It is also suitable for helping the practitioner in setting up and operating his office laboratory. —J.D.R.

PATHOLOGIC PHYSIOLOGY edited by William A. Sodeman, M.D. W. B. Saunders Company, Philadelphia, 1961. 1,182 pages, illustrated, \$15.00.

The popularity of the first two editions of Doctor Sodeman's book eloquently testifies to the fact that it

has continued to fill a basic need of physicians—and has done it well. The new, third edition brings the whole work up to date, and musters into practical and usable form the enormous advances in physiology and biochemistry of the past few years.

There are 28 contributors to this edition. Seven of these have been added since the second edition, and they have been repsonsible for completely rewriting five chapters and extensively revising another. Two of the most important changes have been in the sections on medical genetics and the nervous system. It has been difficult to introduce the important new material without increasing the size of the book excessively, but by streamlining the sections dealing with the review of normal physiology the editor has been able to keep the book to a reasonable size. This edition comes to 1,182 pages (including a good 47-page index) as compared to 963 pages in the second edition and 808 in the first.

The various chapters are adequately illustrated with half-tones, charts, graphs and diagrams; and are supplemented with references to appropriate sources, including the most timely ones.

Sodeman's *Pathologic Physiology* should be of great value to practicing physicians and to medical students in the clinical years. Those who have used the previous editions will need no such recommenda-

tion, and will want to bring themselves up to date by owning this one.—J.D.R.

SURGERY by Richard Warren, M.D. W. B. Saunders Company, Philadelphia, 1963. 1,397 pages, illustrated, \$19.50.

Dr. Warren, a clinical professor of surgery at Harvard Medical School, has compiled a book on surgery almost exclusively contributed to by professors of Harvard Medical School. Dr. Warren suggests that this book fills the "vacuum" created by the passing of Homans' "Textbook on Surgery."

This book attempts (and I believe accomplishes) to deal with surgery in general, delineating principles—basic, diagnostic, and therapeutic. It does not cover details of surgical technique, but yet concisely states suggested procedures to cover surgical conditions. Voluminous bibliographies appear at the end of each chapter for further reference in case one is interested. Pictures and diagnoses are small, but very adequate.

I believe this to be an excellent textbook on surgery, not only for the preparing student, but for the practicing surgeon who desires a concise review of a particular condition with suggested therapeutic procedures for correction of same.—S.L.V.

PREPARATION OF MANUSCRIPTS FOR THE JOURNAL

Exclusive Publication: Articles are accepted for publication on condition that they are contributed solely to this Journal. Publication elsewhere will be subsequently authorized in the discretion of the Editor.

Correspondence: Address all correspondence relating to publication of scientific papers to the Managing Editor.

Manuscript: Type double spaced, on white paper, 8½ by 11, with one-inch margins at the top, bottom, and right, and 1½ inches on the left. Submit the original. Call drugs by their generic names. The trade names can be added, in parenthesis, if they are considered important. Keep one copy of the paper.

Footnotes and References: Use the style of the *Quarterly Cumulative Index Medicus* published by the American Medical Association, which requires, in the order given: name of author, title of article, name of periodical, with volume, pages, month—day of month if weekly—and year as follows:

4. Doe, J. E., What I Know About It, J. Kans. M. S.
54:717-719 (Dec.) 1954.

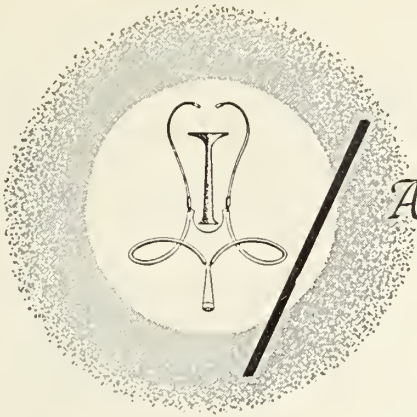
Include only those references specifically referred to in the text.

Reprints: An order slip for reprints with a table covering cost will be sent with the galley proof to each contributor.

Illustrations: A reasonable number of illustrations are allowed without cost to the author. Place the name of the author on the back of each illustration, table, etc. Submit clear and distinct, glossy photographs. Make drawings in black ink on white paper. Attach a slip of paper to the bottom of the illustration with the author's name, identification of article, and appropriate legend. Identify the top of the illustration. Photographs and drawings will be returned if so requested.

Under ordinary circumstances articles are scheduled several months in advance. Notice will be given the contributor when the article has been accepted and again before publication.

Society members throughout the state are encouraged to write up their interesting cases and submit them for publication. The editorial staff welcomes the opportunity of helping you prepare your article for the printer.



Announcements

Professional meetings, conferences, and postgraduate courses of national importance are listed for the Doctor's Calendar. Notice of the session is posted in advance to allow the physician time to make preparations.

JANUARY

- Jan. 12-18 10th annual General Practice Review, Denver. Contact: Office of Postgraduate Medical Education, Univ. of Colorado School of Medicine, Denver.
- Jan. 20-23 *Cardiovascular Drug Therapy*—Hahnemann Medical College & Hospital, Philadelphia.
- Jan. 18-23 American Academy of Orthopaedic Surgeons, Chicago. Contact: John K. Hart, Exec. Sec., 29 E. Madison, Chicago 2.
- Jan. 22-25 Neurological Society of America, Phoenix. Contact: C. H. Davis, Jr., M.D., Bowman Gray School of Medicine, Winston-Salem, N. C.

FEBRUARY

- Feb. 17-19 American College of Surgeons sectional meeting, Denver. Contact: S. J. Harbison, M.D., 55 E. Erie St., Chicago 11.

MARCH

- Mar. 1-6 American College of Allergists graduate instructional course and 20th annual congress, Miami Beach. Contact: John D. Gillaspie, M.D., 2141 14th St., Boulder, Colo.

POSTGRADUATE COURSES

American College of Physicians postgraduate courses:

- Feb. 10-14 *Hypertension and Its Complications*, Augusta, Ga.
- Feb. 24-28 *Recent Advances in Metabolic Diseases*, New York City.
- Mar. 2-4 *Neurology for the Internist*, Rochester, Minn.

- Mar. 9-13 *The Physiologic Basis of Electrocardiography*, Salt Lake City

Registration forms and requests for information on the above courses should be directed to: Edward C. Rosenow, Jr., M.D., Exec. Dir., The American College of Physicians, 4200 Pine Street, Philadelphia 4.

University of Kansas School of Medicine postgraduate courses:

- Jan. 5-8 *Anesthesiology*—First Annual Seminar, Univ. of Miami and Univ. of Florida Schools of Medicine, Miami Beach
- Jan. 27-29 *Medicine and the Law: The Evaluation of Disability*
- Feb. 10-14 Medical-Surgical Clinical Symposia
- Feb. 17-19 *Radiology and Radioactive Isotopes*
- Feb. 24-25 *Vectorcardiography*
- Mar. 9-11 *Pediatrics*
- Mar. 16-19 *Surgery*

For information on the above courses, contact The Department of Postgraduate Medical Education, University of Kansas School of Medicine, Rainbow Boulevard at 39th Street, Kansas City, Kansas.

University of Colorado postgraduate courses:

- Mar. 4-7 *Ocular Pathology*
- Mar. 16-21 *Medical Technology*
- Mar. 25-27 *Management of Trauma*

For further information and detailed programs write to: The office of Postgraduate Medical Education, University of Colorado Medical Center, 4200 E. 9th Ave., Denver.

- Mar. 16-28 *Laryngology and Bronchoesophagology*, Dept. of Otolaryngology, Univ. of Illinois College of Medicine, Chicago.

Maternal Mortality

This is the case of a 24-year-old female, gravida 1, para 0, who died in a well equipped hospital in a large community. The certificate diagnosis was "ventricular fibrillation, aortic stenosis and rheumatic heart disease." An autopsy was performed.

This patient was a known diabetic since the age of seven. She had rheumatic fever at 15 years of age. A diagnosis of chronic rheumatic heart disease with aortic insufficiency and mitral stenosis, as well as cardiac enlargement and insufficiency, was made at that time. She was known to have hypertension and a probable diagnosis of Kimmelstiel Wilson disease was given her in 1957. She was advised never to become pregnant. Surgery for sterilization was advised; however, the patient was determined to have a baby despite medical advice. Her previous general health had been poor and she had had at least one occasion of cardiac decompensation. She was on digitalis.

The patient was seen early in the first trimester of her pregnancy and was followed closely by both an internist and obstetrician. About five weeks prior to her hospitalization, it was known that she had a dead fetus, no fetal heart tones were heard. Until the day of her hospital admission, she had been tolerating the pregnancy fairly well. On the day of admission she was discovered by her husband at home with difficulty in breathing. She was immediately hospitalized. On admission she was cyanotic and had gasping respirations. Artificial respiration and oxygen administration temporarily restored breathing. An infusion was given and Ephedrine 20 mgm injected I.V. She was typed and cross-matched but died 15 minutes after her admission to the hospital. This admission occurred approximately one month prior to her E.D.C.

Autopsy findings revealed:

Chronic rheumatic endocarditis with mitral and aortic valve involvement.

Hypertrophy and dilatation of the heart.

Chronic adhesive pericarditis.

Focal fibrosis of the myocardium.

Advanced chronic passive congestion of lungs, liver and spleen.

Central necrosis of liver.

Edema of brain.

Interstitial pneumonitis.

Arteriosclerosis of aorta, mesenteric splenic and renal vessels.

Intercapillary glomerulosclerosis (Kimmelstiel Wilson disease).

Uterine pregnancy with macerated fetus in utero, approximately 6 months gestation.

Chronic pyelonephritis.

COMMITTEE OPINION: It was the feeling of the committee that the pregnancy was the direct cause of death in this patient because it was known by both the patient and the attending physician that the prognosis would be grave should she become pregnant. Because of the multi-system disease the patient had, particularly the advanced renal disease, it is felt that there was nothing that could have been done to alter the outcome of this case once the patient became pregnant and was determined to attempt to carry the pregnancy to term.

CLASSIFICATION: Maternal death, obstetric, non-preventable.

KANSAS STATE DEPARTMENT OF HEALTH

TOPEKA, KANSAS

Division of Preventable Diseases—Division of Vital Statistics—Kansas Morbidity Incidence

Summary of Cases Reported in August 1963 and 1962

And cumulative totals for the first eight months of 1963 and 1962

Diseases	August			January to August Inclusive		
	1963	1962	5-Year Median 1958-1963	1963	1962	5-Year Median 1958-1963
Amebiasis	3	5	4	78	37	37
Aseptic meningitis	—	6	*	—	10	*
Brucellosis	—	—	2	6	13	30
Cancer	346	212	346	2,690	2,611	2,690
Diphtheria	—	—	—	—	—	—
Encephalitis, infectious	3	1	3	9	15	15
Gonorrhea	271	213	244	1,913	1,522	1,747
Hepatitis, infectious	20	21	21	172	352	196
Meningitis, meningococcal	1	—	—	11	10	11
Pertussis	14	12	11	53	34	37
Polioomyelitis	—	—	3	—	—	7
Rheumatic fever	—	1	—	—	8	3
Salmonellosis	15	3	4	165	35	37
Scarlet fever	1	—	2	282	406	406
Shigellosis	—	5	5	31	41	41
Streptococcal infections	112	13	14	965	914	921
Syphilis	70	100	100	731	816	827
Tinea Capitis	2	14	11	45	88	75
Tuberculosis	20	18	21	188	174	188
Tularemia	2	—	1	13	7	13
Typhoid fever	1	—	—	1	—	2

* Statistics on 5-Year Median not available.

WESTERN EQUINE ENCEPHALITIS IN KANSAS

During this past month, the incidence of Western equine encephalitis in horses has sharply increased in Kansas and is now extensive throughout most of the State. According to a survey this past week by the Sedgwick County Health Department, 95 cases have reportedly occurred or currently exist in horses in the South-Central counties of the State.

Scattered reports indicate that mosquito populations are likewise quite extensive at this time and will remain so until after heavy frosts.

In the interim, an increasing incidence of Western equine encephalitis cases in humans is likely to occur.

To date, laboratory results are pending on a number of suspect cases. County health officers are urged to notify all physicians within their jurisdiction of this problem.

Confirmation of Disease: Paired sera should be submitted for complement fixation tests. First specimen (5 cc. clotted blood—not FROZEN) should be obtained during acute stage; second specimen should be obtained 2-3 weeks later.

WHY IMMUNIZE AGAINST MEASLES?

"... any parent who has seen his small child suffer even for a few days with persistent fever of 105° F., with hacking cough and delirium wants to see this prevented, if it can be done safely"—Alexander D. Langmuir, M.D.

In the U. S., measles causes more deaths than any other common childhood disease. Approximately 500 children die each year as a result of infection with the measles virus.

Overt signs of encephalomyelitis are estimated to occur in one in 1,000 patients with measles. Gibbs found that 50 per cent of the patients with uncomplicated measles showed abnormalities by electroencephalography, suggesting the central nervous system is involved more frequently than usually appreciated.

Studies indicate that the attack rates are highest in the second to third and sixth year of life. More than 50 per cent give histories of measles by age 6 years. By age 15, 80-90 per cent have experienced the infection.—Virginia Dept. of Health Morbidity Report

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